THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

VOL. XVI. No. 396—19th YEAR.] LONDON, DECEMBER 24, 1867. [Subscription 15s. in Advance, 18s. Credit. DOUBLE No. Price 1s.

RAMSAY'S NEWCASTLE CANNEL COAL. Analysis by DR. FYFE, M.D.:—
9746 cubic feet of gas per ton of coal.
28-candle gas.
13¼ cwt. coke per ton of coal.
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Edmonton, Dec. 21, 1867.

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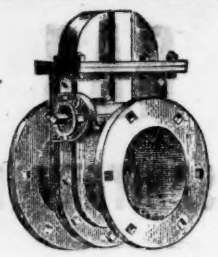

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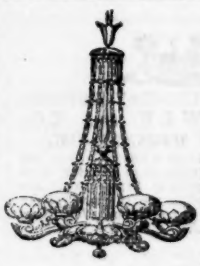

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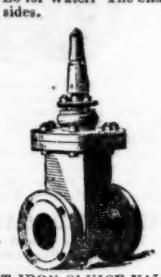

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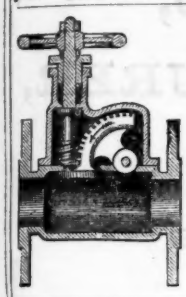

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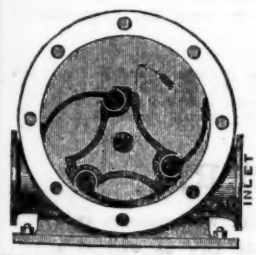

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NOTICES.

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THE JOURNAL OF GAS LIGHTING,
WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, DECEMBER 24, 1867.

Notes upon Passing Events.

THE Corporation of London is on its trial. All English institutions that claim privileges and levy taxation are on their trial in these days, when anything that costs money will be judged by the test of utility. No one of political influence desires to destroy the Corporation. Its most formidable enemies are within its own council chamber—vain, self-confident men, incapable of looking beyond the regions of City adulation or of learning anything from experience. Every year's extension of the metropolis creates a new pressure against the privileges of the Corporation, which can only gain new strength by reversing its policy—marching in advance when public visible improvements are concerned, instead of yielding tardily to irresistible force. Nothing shows the weakness of the Corporation more than the position it has taken up as regards the Metropolitan Board of Works, not striving earnestly to rival it in actively executing public works—the only question the public care about—but seeking to undermine this rival in a very feminine way by gossip, by spiteful imputations, and ridiculous comparisons. There is certainly one great difference between a modern institution like the Metropolitan Board and an ancient institution like the Corporation of London. The former is obliged to live on its present character, the latter hopes to exist on a past reputation and numberless banquets of Homeric dimensions. The Metropolitan Board, suspecting a scandal, at once puts the members accused on their trial. The Corporation of London, on the contrary, like a conclave of cardinals, covers the first rumour of delinquency amongst its body with proceedings of impenetrable secrecy. It would be dangerous to refer to the jobs of living Common Councilmen, and cruel to dig up the names of the dead; but it is notorious that all the work of the Corporation is done on a mutual jobbing principle, and that it is impossible to get any member of the Common Council to admit or even listen to a charge against an alderman or fellow-councilman. The outside public may be indignant at the proceedings of a defaulting churchwarden or a deceptive banker, but all offences are condoned over the luscious turtle and the friendly glass of wine. When we overlook the management of the Corporation works, we remember Sam Slick's description of the New England pedlar, "He never steals, he only takes an advantage." The Corporation funds are never the subject of gross malversation, but it is not criminal to give orders for goods or merchandise and leave the seller to settle his prices with a friendly committee. If evidence be wanted of the system of mutual accommodation, look at the enormous cost of all City work whether it be a building or a banquet. Look at the alacrity with which funds are voted for entertainments at which 90 per cent. are of the Common Council clan—sons, brothers, cousins, uncles, aunts, and creditors, to the exclusion of the invited guests—and the costiveness displayed where any works of utility are in question. A monument of City incapacity is to be found in the space made vacant by the Metropolitan Board of Works for the use of the public where Holborn Bars lately stood—a gut which made wide Holborn as useless for traffic as Newgate Street or the Poultry. The plan of a foreign cattle market is first repudiated and then accepted with the secret intention of frustrating the much-needed improvement by intentional delay. The Corporation accepts the Government Bill, not to show how to do, but how not to do it. To prove the innate weakness, the declining power of the Corporation, we have only to notice that its leading members—the most prominent speakers, and chairmen of committees—are exactly the kind of men who would be nowhere in Parliament as Ministers or members of the Opposition. In the House of Commons the man who has influence on either the Treasury or the Opposition benches must, in addition to power of debate, possess courtesy and an undeniable character for truthfulness—nay, character will often, as in the case of Lord Althorp after the Reform Bill, make up for very deficient powers of speech. In the Common Council, fluency, with a reputation for spiteful ill-nature and thorough unscrupulousness where a point is to be gained, if accompanied by convivial talents, are a sure passport to power; for most of these municipal legislators seem cowed by bullying audacity.

These considerations occurred to us in looking over a Corporation Blue-Book, printed in the usual imposing style, entitled "Proceedings of the Committee on Local Taxation and "Government." This committee was appointed "to watch "the proceedings of the select committee of the House of "Commons appointed to inquire into the local government "and taxation of the metropolis." One object was to obtain power to levy rates for defraying the expense of street improvements, long contemplated and tardily proposed, but

unfortunately the House of Commons committee reported against the Bill, and it was lost. It was lost because the House of Commons has no confidence in the vigour and ability of the City to push on great works. The committee complain that the Chamberlain was not permitted to give in person the sort of evidence contained in his lately-published book, in order "to prove that, in reference to works and "improvements effected by the Corporation, no complaint had "at any time been made of inefficiency, undue delay, or mal-"feasance of any kind." "These be big words," as Fluellen says, but the unfinished streets from Clerkenwell to Farringdon Street, Holborn Bars, the Poultry, the great compensation paid to the Union Bank, in Mansion House Street, for a slip of land which might have been bought for a song when first the widening of Mansion House Street was planned, are stony facts not to be wiped out by the piteous common-places of Mr. Scott. The report of the Local Government Committee, after the usual amount of self-praise, contains an appendix, prepared by the Chamberlain, setting out the Chief Baron's celebrated seven millions worth of public works—a catalogue of the improvements, public works, &c., under-taken by the Corporation since 1760. There is no statement of the revenues confided to the Corporation by Parliament to execute these works, or levied in local and general taxation under corporate powers. Accepting the total as useful work economically performed in a century, seven millions and a half, or less than eighty thousand a year, is a miserably small sum for such a Corporation with such powers to have expended on public objects. How much has been expended in the same time on the committee and other live machinery for doing the work? How much for banquets and little unnoticed feeds? But even the Corporation's own schedule will not bear close examination. The maxim that property has its duties as well as its rights seems to have been lost sight of by the ingenious compiler. The schedule includes not only sums raised by Act of Parliament for an express purpose, but money expended for the common duties of a Corporation. For instance, that wretched failure, old Blackfriars Bridge, not built with Corporation money, figures for £230,000; and, next, £30,000 for removing the tolls on London Bridge, as if the removal of tolls was not a first necessity of trade. Paving Goswell Street is put down as a public work, and so is repairing a common sewer in Bridge Street. Rebuilding London Bridge, with approaches, figures for a million and a half, of which nearly half was occasioned by contracting for the bridge without first taking the approaches into consideration. The whole was paid out of special taxes. In fact, the ingenious Chamberlain has made out his total just as though a great landlord and lord of the manor desired to show how much he had expended for the benefit of his tenants and the town on his estate, and included not only the cost of the market, where he took tolls, and the pier, where he levied dues, but of enlarging his wine cellar, "new stables and coach-house, cost of forming a "croquet-ground, gravelling and planting the main avenue up "to the hall." After all, the figures would not, with the most painful raking up of old accounts, have assumed any importance, if it had not been for the addition of the Holborn Viaduct, one and a half millions; the new Meat and Poultry Market, six hundred thousand pounds—both recently undertaken, after years of deliberation, in consequence of the competition of the Metropolitan Board of Works—and the new Cattle Market in Copenhagen Fields, nearly half a million, which was forced on the unwilling Corporation by the Government. A critical examination of the Corporation history for the last hundred years shows that they have spent as little of their own revenues on public purposes as they could help, and most of that very wastefully. Unless in the future they can show more work than in the past, by some body or other they will be superseded, and left alone to dispense that splendid hospitality, to each other, which makes the only effective point in Chief Baron Kelly's laudatory speech. The Baron is an admirable advocate, and would have said more if there had been anything to say. It is, we repeat, an awkward fact and figure that about two millions and a half—or one-third of the seven millions and a half devoted to public works in two hundred years—was undertaken since 1862, after the competition of the Metropolitan Board had commenced.

A short Bill, brought in by Mr. Waldegrave Leslie, Mr. Goldney, and Mr. Graham, "to amend the law in respect of "the sale and purchase of shares in railway and gas companies," will, if it becomes an Act, cut down the business of the Stock Exchange to comparatively insignificant proportions. It is an attempt to put an end to those time bargains in shares, which afford such ample scope for gambling in a quiet, respectable way, without going to Tattersall's, or subscribing to the Victoria Club. We cannot imagine that the stock-jobbing interest will allow this Bill to pass into law, although it will be urged that the effect will be to put an end to conspiracies for depreciating the value of certain property by a series of fictitious sales—conspiracies from which some very respectable and intrinsically sound undertakings have suffered severely. The Bill is very short, all the essence being contained in the following clause:—That all contracts, agreements, and tokens of sale, after a certain date, made for the sale of any shares or stock in any railway or gas company, shall be void unless the contract shall designate the numbers by which such shares are distinguished on the register of the company; and, if there is no register, the contract shall set forth the name of the person in whose name the shares stand at the time of the contract as registered proprietor; and any false entry shall be treated as a misdemeanour, and punished accordingly. This Bill, if it becomes an Act, may stop conspiracies against the credit of companies, but the gambling spirit is too strong to be arrested by Acts of Parliament. Stopped at the spigot, it will infallibly burst out at the bung-hole.

A correspondence between the Thames Conservancy Board and the Metropolitan Board of Works discloses a serious condition of the Thames near the outfalls of the main drainage. Mr. Leach reports that a very extensive deposit of mud has taken place near the great northern and southern sewers outfalls, in Galleon's and Halfway Reaches. Near the southern outfall a depth of full seven feet has been discovered. Near the northern outfall, about two thousand feet *above* the point of delivery, are the greatest accumulations. In several places a depth of seven feet has been formed. It is remarkable that the greatest accumulation has occurred some distance from the outfall on the upper side, and the character of the mud shows whence it has come. It has been put forth as part of the main drainage scheme that the discharge of the sewage would be so managed that it should not be carried up stream. The deposit occurring where it does seems to show that the contents of the sewers have been run out late in ebb and early in the flood tide. On the lower side there is more of a deposit of small shingle than formerly. The result of the survey shows that near the northern outfall a space of more than 40 acres, and near the southern outfall of about 120 acres, of the bed of the river, has been covered by a deposit varying in depth down to seven feet. Dr. Letheby reports that the deposit consists of sewage matter, thus—"It is evident, from "what I know of the usual composition of the mud of rivers, "that this is a very large proportion of organic matter; and "that, by undergoing putrefactive decomposition, the mud "may be a cause of serious alarm, especially as it there meets "with sea water, the sulphates of which may, by their chemical "decomposition by the putrefying mud, occasion the escape of "much sulphuretted hydrogen, and set up that remarkably "offensive change which is characteristic of the action of "sewage upon sea water." Mr. Bazalgette, called upon by the Metropolitan Board to report, doubts whether the accumulation is due to the operation of the main drainage; at any rate, he only admits an increase of sixty thousand cubic feet out of a million; and the clerk of the Board writes to the Conservancy in effect that his Board have done their duty in discharging the sewage, and that the Conservancy must do theirs in clearing away the deposit, if any. This evidence makes one more anxious to see the day when all the sewage will be utilized in market gardens and dairy farms; not that we consider any one was to blame for a partial failure in so great an experiment, but we cannot afford to have the navigation of the Thames impeded because the engineers of two public bodies disagree about their duties.

Circular to Gas Companies.

We have been favoured with copies of the Bills to be presented to Parliament by the Corporation of London, by the metropolitan gas companies, by the Imperial Gas Company, and by the Chartered Gas Company, but they reached us at so late an hour, that we are unable to give so complete an analysis of all of them as their importance deserves. The preamble of the Bill of the Corporation affirms that—"It is expedient, on public

"and sanitary grounds, not only that gas should not be manu-"factured in the City, but that a better and cheaper supply of "gas should be procured, and that the public and private "lighting of the City should be under the control of the public "authorities." It is further alleged that—"It is expedient "that the Corporation should be authorized to purchase the "whole of the works, mains, and property of the Great Central "Gas Consumers Company and of the City of London Gas-"light Company, and also to purchase so much of the works, "mains, and property of the Gaslight and Coke Company as "are situate within the City of London." The limits of the Act applied for are to include the City of London, the Metropolitan Cattle Market, and the Metropolitan Meat and Poultry Market; it being provided that no gas is otherwise to be supplied along the course of the mains beyond the City. The Corporation are to be authorized to purchase, or acquire by compulsion or agreement, the undertakings of the before-mentioned companies; and they require power also to purchase, with the consent of two-thirds of the proprietors, the works and mains of the West London Junction Company, situated at Wormwood Scrubs. The purchase-money of all these works may be converted into a rent-charge, as may be agreed upon. The works of the Great Central Company and of the West London Junction Company, being situated beyond the City, may be continued by the Corporation on their present sites; but the works of the two other companies, which are within the City, are to be removed as soon as new works can be erected at North Woolwich. In addition to the lands required for that purpose, specified in a schedule, the Corporation require to be empowered to purchase by agreement 100 acres of other lands. The time to be allowed for the compulsory purchase of the gas-works is limited to five years. The Corporation offer to provide a testing-place for testing the illuminating power, the purity, and the pressure of the gas, which is to be of the illuminating power of 18 candles, and not to contain more than 20 grains of sulphur in 100 cubic feet. The chemical examiner, to be appointed by the Corporation, is, on the payment of a fee of 1s. by any consumer, to examine and report on the quality of the gas, and when proved to be not equal to the required standard, two justices before whom complaint is laid may make an order declaring the complaint to be well founded, and if within a reasonable time the Corporation should fail to comply with an order to remove the ground of complaint, they are to be liable to a fine of £5 for every day during such default. The Corporation undertake to supply 18-candle gas at 3s. 6d. per 1000 feet. Such an undertaking would render completely nugatory a proposed application of the profits "for the public benefit of the inhabitants of the City, "and the improvement thereof," especially as a sinking-fund is to be set apart for paying off all moneys borrowed on account of the gas undertaking within thirty years. The amount the Corporation require to be authorized to borrow is £500,000, independently of the sums to be paid for the purchase of the undertakings of the gas companies. The other provisions of the Bill are similar to those generally included in gas Acts, with the exception that in one of the concluding clauses it is provided that "nothing in the Metropolis "Gas Act, 1860, shall apply to the Corporation acting under "this Act." It thus appears that the Corporation still conceive that gas of 18-candle illuminating power can be supplied with profit in London for 3s. 6d. per 1000 feet, and we admire their consistency in offering to apply to themselves the condition they endeavoured last session to impose on the metropolitan gas companies. Should Parliament grant the power to supply gas which they require, there will be no one to oppose the terms which they propose to charge, unless, indeed, the citizens should take alarm at a proposal which would threaten further calls on the Corporation funds to make up the deficiency that would be sure to follow. Opposition from the same quarter may also be raised to the absurd proposition to purchase gas-works near Kensal Green to light places beyond the boundaries of the City, but that part of the scheme would, we presume, be abandoned unless power be obtained to supply gas within the City. It is satisfactory to find that the Corporation make no attempt to compete with the existing companies, experience having taught them that Parliament would not sanction any such attempt.

The Metropolitan Gas Companies Amalgamation Bill is similar in its general provisions to the Metropolis Gas Bill of last session, as proposed to be amended by the committee, but in some points there are important differences. It provides that after the passing of the Act the companies may settle a scheme for the amalgamation of the companies, or some of them, which they shall submit to the Board of Trade, such scheme to be framed with a view to the reduction of expenditure; and when approved by the Board of Trade, it is to be equally binding as if enacted by Parliament. If, however, no scheme be agreed to by the companies within six months from the passing of the Act, the Board of Trade are to be authorized to appoint three persons as commissioners, to frame a scheme for the purpose. Any scheme of amalgamation is to contain provisions respecting a re-arrangement of districts, the positions for the manufacture and storeage of gas, and to provide for proper compensation "to persons holding places or offices, or en-"gaged in the management, administration, or control of any "company." The companies are to agree among themselves as to the arrangement of capitals, the order of priority of shareholders, and all other such matters involved in the amalgamation. Referees are to be appointed to control generally the affairs of the gas companies. The Board of Trade, the Metropolitan Board of Works, and the Commissioners of Sewers are each to appoint one, and the companies are to appoint two. The referees are to determine the mode of testing the gas, to superintend the processes of manufacture, to prescribe the maximum amount of impurity to be allowed, and the number and positions of the testing-places. The Metropolitan Board of Works or the Commissioners of Sewers are to appoint an examiner at each testing-place, and the Board of Trade is to appoint a chief examiner, to whom all questions in dispute are to be referred. The gas is to be tested at each station at least three times a day, the average results of the testings to represent the quality of the gas on each day. The illuminating power from the 31st of December, 1868, is not to be less than 14 candles, and is so to continue until altered by special commissioners to be appointed for that and other purposes; and the maximum price is to be 6d. per 1000 feet below the maximum price fixed by the Metropolis Gas Act, 1860. If, after the period stated, application be made to the Board of Trade for a revision of the scale of illuminating power or price, the Board are to appoint two or three competent persons by whom the revision is to be made, it being provided that, in fixing the illuminating power and the price, the commissioners are to adjust them so as to be calculated "to yield to the company, "with due care and management, a dividend in that year "attaining as near as may be, but in no case exceeding, the "prescribed rate, and to make up any such arrears as are "hereinbefore mentioned," no limitation being fixed to the number of years during which the company may be entitled to arrears. It is provided, however, that deficiency of dividend caused by forfeitures or penalties is not to be deemed such an arrear as is authorized to be made up. In case the gas be of less purity than prescribed, the company are to forfeit a sum not exceeding £50 for each station where there is a default, unless it be owing to unavoidable causes. An auditor of accounts is to be appointed by the Board of Trade, who is to ascertain the amounts of the capitals of the different companies, to prescribe a uniform form of accounts, to audit them half yearly, and to certify the amount of dividends to be paid. The pressure of the gas is to be not less than six-tenths of an inch of water in the daytime, nor less than eight-tenths in the night. There are no special provisions respecting public lighting beyond authorizing the fixing of governors to each lamp. The amount of the remuneration of the commissioners, the gas referees, the chief examiner, and of the auditor, is to be determined by the Board of Trade, and is to be paid by the gas companies; but the gas examiners are to be paid by the Metropolitan Board of Works or the Commissioners of Sewers. Power is to be given to the new companies to purchase railway trucks, coal ships, coal mines, and collieries for the purpose of cheapening or improving the production of gas. The last clause of the Bill provides that the expenses of the Act are to be borne by the thirteen companies in proportion to the amount of the gas rental of each. The principal points of difference between this Bill and the amended Bill of last session are, that in the present one there is no limitation of the number into which the existing companies may be amalgamated; compensation is allowed to the directors as well as to the ordinary officers of the companies; the presence of sulphuretted hydrogen in the gas is not absolutely prohibited; the illuminating power is not raised to 16 candles after January, 1869, nor is the maxi-

mum price fixed after that date, those questions being left for the decision of the commissioners; the payment of dividends in arrear is not limited to "the last preceding year;" the minimum night pressure of gas is eight-tenths of an inch instead of one inch; and there is also omitted from the present Bill a special clause relating to the price to be charged for supplying the public lamps.

The principal objects of the Imperial Company's Bill are to obtain power to purchase land at West Ham for a new site for their works, and to raise additional capital by the issue of shares to the amount of £975,000, the rate of dividends to be payable on the capital so raised being left blank in the Bill, to be filled up by the committee. It is proposed to alter the scale of voting at all general meetings of the company, and there are various clauses for the protection of the owners of property through which the mains of the company would be laid to the new site at West Ham.

In the Bill promoted by the Chartered Company it is proposed to annul the Royal Charter, and repeal all the Acts of Parliament obtained since 1810, so that the company may be reincorporated. The present capital of the company is declared to be £900,000, and they require to be authorized to raise an additional capital of £1,010,000, consisting of £650,000 new capital, and £360,000 "in respect of divisible profits of "the company, expended by them for purposes for which "capital is properly applicable." The City Gas Company are to be authorized to subscribe towards the new capital to the amount of £1,500,000. The dividends on the capitalized profits are to be limited to 5 per cent. The number of directors in the reincorporated company is not to exceed twelve, the qualification of a director being the possession of shares amounting to £1200. Power is required to purchase land at Barking Creek for a new site for their works. The company also require to be authorized to sell gas in bulk to any other metropolitan gas company. It is further sought by the Bill to confer power on the City Company to raise, by the creation of new shares, the amount they may subscribe to the undertaking of the Chartered Company. There are several clauses, similar to those in the Bill of the Imperial Company, for the protection of the rights of the owners and occupiers of lands through which the mains of the company may be laid.

Public lights have for years past been the source of nearly all the bickerings and litigation between local authorities and gas companies. These dissensions have their origin in the system adopted in the early days of gas lighting, when, in order to obtain the permission of local authorities to break open the pavement to lay their mains, the companies undertook to supply gas to the public lights at unremunerative prices. When the contracts first entered into expired, the gas companies were unwilling to renew them on the same terms, and much dissatisfaction was consequently expressed at the attempt to approximate the charge for gas to the street-lamps to that paid by private consumers. By degrees the injustice of such an unequal system has been generally admitted, and uniformity in the charge to the two classes of consumers has become a rule which is acknowledged by the Legislature in most recent Acts of Parliament. The Gravesend Gas Company are among the last who have emancipated themselves from the extortion of local authorities, and the circumstances under which they have done so are recorded at great length in our present number, the importance of the case appearing to justify the appropriation of so much space to a report of the proceedings. The price that had for some years been charged for lighting the street-lamps was £3 5s. per lamp, each burning 5 feet per hour for about 3000 hours in the year. The company intimated to the commissioners two years ago that they intended to raise their charge to £3 10s., which would be equivalent, after deducting the expenses of lighting, extinguishing, and repairs, to about 3s. 7d. per 1000 feet of gas, while the price to private consumers was 4s. 6d. The commissioners considered the demand exorbitant, and had recourse to Mr. Flintoff to aid them in resisting it. He, of course, would be prepared to produce his stereotyped estimate of 2s. 9d., and he recommended them not to agree to the company's offer. Negotiations ensued between the commissioners and the gas company, without any satisfactory result, and it was ultimately resolved to proceed to arbitration, in accordance with a clause in the company's Act providing for such a settlement in case of dispute. Mr. Flintoff was named as arbitrator on the part of the commissioners; and, a gas engineer to whom the company applied to represent them having refused to act as coadjutor with Mr. Flintoff, an attorney was appointed on their behalf. These two could not, however, agree, and it became necessary to make an application to a judge at chambers, under the provisions of the Common Law Procedure Act, to appoint an umpire, and the Hon. George Denman, Q.C., was ultimately named. The case first came on for hearing in October last, at Gravesend, and after two days sitting it was adjourned to the 5th inst., at the Palace Hotel, Westminster, Mr. Michael appearing as counsel for the gas company, and Mr. Philbrick for the commissioners. The parties agreed on a lighting schedule based on an annual lighting of 2975 hours, with a reduced consumption of 4 feet per hour, giving a total annual consumption of 11,900 feet. For that supply of gas the company claimed to be paid £2 13s. 7d. per lamp, at the rate of 4s. 6d. per 1000 feet, and 14s. 5d. for lighting, extinguishing, and cleaning, making the total charge per lamp £3 8s., or only 2s. less than the price at which they offered to supply 5 feet of gas to each lamp. Evidence was adduced in support of those figures, the witnesses examined on behalf of the company being Mr. Southgate, the secretary, Mr. Barlow, Mr. Penny, and Mr. Cooper, the clerk of the company. Of course no public lamp inquiry would be complete without Mr. Hughes, and he was accordingly pressed into the service of the commissioners. It is, however, due to him to say that he was in no respect responsible for originating the proceedings, of which Mr. Flintoff was the sole instigator. He, indeed, carped and cavilled at the figures of the company, by which the cost price of gas was proved to be 2s. 10¾d. per 1000 feet, exclusive of depreciation and dividend, which, if added, raised the price to 4s. 7½d. Mr. Hughes was anxious to substitute his estimates of what the cost of coal and materials ought to be for the prices actually paid by the company, for which he was often sharply rebuked by the umpire; nor could he obtain favourable attention to his crotchet that the public lamps ought to be supplied with gas much cheaper than private consumers. The umpire was not long in arriving at a decision, for four days after the proceedings terminated he made an award, giving the company all that they demanded. The commissioners may, indeed, console themselves with the saving of 2s. per lamp by reducing the consumption from 5 feet an hour to 4, to the discomfort of the inhabitants of Gravesend, but, as the costs for the arbitration cannot be much less than £250, it will be many years before the commissioners can reap any advantage from their mistaken economy. The case is so important that we purpose reprinting the proceedings in a cheap form, for distribution whenever similar questions are raised.

Pressure of other matter has hitherto prevented our publishing the annual accounts of the Manchester Gas Committee, made up to the 30th of June last. One of the tables in those accounts, reprinted in another column, presents some remarkable results of the working of the model Corporation gas trading establishment. It appears that, notwithstanding a large increase of consumption, amounting to upwards of 58 million feet, or 5 per cent. of all the gas supplied, there was a diminution of the gross profits of £5230, the amount applicable to improvement purposes being now only £13,257. This falling off has not been caused by a diminution of the price, which remained the same, while the illuminating power of the gas was reduced 1 candle. Had the previous standard been maintained, there would have been a much greater diminution of the profits. It further appears from the tabular statement that the gradual reductions in the price of gas which have taken place since 1863 have been accompanied by large diminutions of the profits, the increased consumption not having been sufficient to compensate for the lower price. Under these circumstances, the *Manchester City News* asks, "Who shall pay for our im-"provements?" and it is intimated that the price of gas must be raised, otherwise it will be necessary to impose an improvement rate, to make up for the deficiency in the amount of gas profits applicable to improvement purposes.

The recent Fenian outrages have caused some alarm to gas companies, as the false notion generally entertained, that gas stored in the holders is explosive, might, it is feared, induce some malicious and reckless miscreants to set fire to the works in the expectation of producing a destructive explosion. It is, at all events, desirable, under existing circumstances, to keep a strict surveillance over the workmen. The evening papers of yesterday contain telegraphic reports from Warrington and Glasgow of abortive attempts at mischief, but the details are

so meagre that no opinion can be formed as to the truth of the allegations that the acts were wilful.

As we purpose reprinting, in our next number, the share lists of gas and water companies, we earnestly request the assistance of our readers in rendering them as correct and complete as possible, by their returning to us, on or before Wednesday, Jan. 1, 1868, the slips issued with our present number, so as to enable us to rectify any errors and fill up the omissions in the list published on the 25th of December, 1866; and that special advice may be forwarded to us of any changes that have taken place in the paid-up capitals, dividends, or value of shares, of which notice has not already been transmitted. Attention to these particulars is the more urged, as numerous corrections reached us after the publication of the last lists, which would have been duly made had they been sent in sufficient time.

Correspondence.

LUBRICATORS FOR GAS EXHAUSTERS.

SIR,—In your last impression Mr. Rich asks where coal oil for lubricating may be purchased at 6d. per gallon. I beg to inform him that I purchase it at that price in small quantities from Messrs. Lewis Demuth and Co., tar distillers, Oldbury, near Birmingham.

JOHN OHREN.

Longton, Dec. 11, 1867.

SIR,—The coal oil I use for lubrication is obtained at the price quoted—6d. per gallon—from Messrs. John Bethell and Co., 38, King William Street, London Bridge.

J. O. N. R.

Black Rock, Brighton, Dec. 18, 1867.

Register of New Patents.

936.—EDWIN WILLIAM BALL, of Birmingham, in the co. of Warwick, manufacturer, for "*Improvements in gas fireplaces and gas-stoves, and in apparatus for heating conservatories and other rooms.*" Patent dated March 29, 1867.

This invention consists, first, in applying to or combining with open fireplaces and open stoves a series of Bunsen's gas-burners, or other burners burning a mixture of gas or inflammable vapour and atmospheric air, for the purpose of heating to bright redness pieces of pumice-stone, plumbago, or other solid substance not injuriously affected by heat, with which the grate or stove is filled or partly filled. Secondly, in applying to or combining with a boiler of the construction described and represented, or a coil of pipes, one or a series of Bunsen's gas-burners, or other similar burners, for the purpose of heating the water in the said boiler or coil of pipes.

911.—RICHARD CANHAM, of Clerkenwell, in the co. of Middlesex, and FREDERICK WILLIAM KREUT, of Guildford Street, Farringdon Road, also in the co. of Middlesex, for "*Improvements in means or apparatus employed in the cure of smoky chimneys, and in ventilating buildings and other places.*" Patent dated March 30, 1867.

This invention has for its object improvements in means or apparatus employed in the cure of smoky chimneys, and in ventilating buildings and other places, and relates, first, to improved combinations of parts forming caps or tops for chimneys, and for ventilating purposes, and formed of any suitable material.

One arrangement consists in combining a cone or pyramid at its base with the base of an inverted truncated cone or pyramid, the upper cone or pyramid being provided with suitable apertures, and a plate or small inverted cone or pyramid in the upper part thereof to divide the upward current of smoke or air, and thereby deflect it towards the said apertures. A truncated cone or pyramid is employed to cover the apertures in the upper cone or pyramid, and the lower truncated cone or pyramid is supported at a suitable distance from another inverted cone connected at its lower end to the chimney-top or ventilating shaft, a portion of such chimney-top or ventilating shaft passing up a suitable distance into the interior of the parts before described.

Another arrangement of chimney or ventilating cap consists in the application of suitable guides or deflectors to such caps as are formed with a series of tubes, truncated cones, or pyramids, or with openings in the sides thereof, such guides or deflectors being fixed at a suitable distance below each of the cones, pyramids, tubes, or apertures, so as to collect the wind and direct it into the mouths of the cones, pyramids, tubes, or openings.

Another arrangement of chimney or ventilating cap consists in the application of one or more tubular guards to cover suitable apertures formed in the body of the chimney or ventilating cap, such apertures being in the form of narrow horizontal slits or openings, a plate or inverted cone, or other suitably shaped deflector, being fixed within the cap just above the openings, so as to deflect the smoke thereto. The top of the cap may be surmounted by a cone or other suitably shaped cover.

965.—CHARLES DENTON ABEL, of 20, Southampton Buildings, Chancery Lane, in the co. of Middlesex, patent agent, for "*Improvements in compositions for treating fluids employed for illuminating purposes.*" A communication. Provisional protection only obtained. Dated April 1, 1867.

This invention consists in a preparation of alkali mixed with resinous gum and gum camphor, or either of them, which is to be mixed with hydrocarbon oils, or other products known as benzine, naphtha, and gasoline, when used as burning fluids for illuminating purposes, for the purpose of increasing their illuminating properties, and decreasing their volatility, so as to overcome the danger of explosion arising from the formation of hydrogen gas or gaseous vapour which is evolved from these hydrocarbons at a low degree of heat.

998.—JOHN AUGUSTUS BOUCK, of Manchester, in the co. of Lancaster, manufacturing chemist, for "*Improvements in burning petroleum, creosote, gas tar, and other such fluid bodies capable of being used as fuel.*" Provisional protection only obtained. Dated April 3, 1867.

This invention consists in injecting petroleum, creosote, gas tar, or other such fluid bodies, capable of being used as fuel, from the fire-bars or perforated tubes on to coke, coal, or other substance capable of sustaining heat.

1018.—HENRY BUSS, of 56, High Street, Shoreditch, in the co. of Middlesex, M.D., for "*Improvements in the construction of sea-walls, quays, jetties, piers, and roadways, in the reclamation of land, in the formation of docks, reservoirs, basins, and coast harbours.*" Patent dated April 5, 1867.

This invention consists in the fixing firmly to the floor of a river or sea-shore, or elsewhere, of two parallel rows of iron foot-rails. The precise mode of fixing must depend upon the nature of the shore. The space enclosed between such foot-rails is to be of the full width of the required sea-wall. Each foot-rail is grooved on its upper edge. Into this groove is run the tongue of an upright iron stile, which is also grooved at both its edges. Into the groove of the foot-rails is run the edge of an iron plate panel, which is likewise slid into the groove of the upright stile. These stiles and panels are kept together by top longitudinal rails, which are also grooved to receive the tops of the aforesaid panels and stiles. The stiles are secured both to foot and top rails by bolts or otherwise. Transverse and oblique rods connect together and secure the panel walls in position. These panel walls may be either vertical to the floor and parallel to each other, or inclined at any desired angle to each other. Panel and stile may thus be quickly added in succession after the foot-rails are fixed, and the whole secured by internal appropriate framing for any desired length down to a low-water mark. Finally, the space included between the two panel walls will be filled up with concrete. The filling up with concrete will keep pace with the advance of the iron panel walls, provision to be made if necessary for temporarily excluding the water at flood-tide from flowing in at the open end, so that it may not interfere with the solidification of the concrete.

1024.—FRANÇOIS ADOLPHE MOCQUARD, of 32, Cours Belzunce, Marseilles, in the empire of France, civil engineer, for "*A new application of gas-burners.*" Provisional protection only obtained. Dated April 5, 1867.

This invention consists in modifying ordinary gas-burners, to render them applicable to the combustion of portable gas, rich gas, and carburetted gas, for the purpose of effecting, and on the principle of, the dilatation of gas, by the employment of a chamber or receiver placed between the lower and the upper part of the burner, which chamber may at discretion be provided with a stopper. The lower part is provided with one or several narrow openings, to give passage to the gas and spread it over the receiver. This principle may also be applied to the portable burner.

1026.—STEPHEN MATTHEWS, of Chapel Row, Portsea, in the co. of Hants, for "*An improved combined lift and force-pump.*" Provisional protection only obtained. Dated April 5, 1867.

The object of this invention is to enable an ordinary pump to throw a constant stream of water with only one foot-valve, and the invention is performed in the following manner:—To a suitable casing or valve-box, containing the foot valve of the pump, placed immediately over the suction-pipe, the inventor connects three barrels, the area of the middle barrel being equal to the combined area of the two outer barrels. The middle barrel is fitted with a ram, and the said barrel is fixed immediately over the foot-valve of the pump; the other barrels are each fitted with a bucket, and the rods thereof, as also that of the ram, are connected by their upper ends to a cross-head, the ends whereof work in guides; and to this said cross-head a connecting-rod is attached, communicating with any suitable prime mover. The kind of valve he proposes to employ is an equilibrium valve, well known by miners as the Cornish valve.

Another important feature in this invention consists in adapting a hinged or sliding door to the valve when necessary. The barrels containing the buckets are connected together by a branch-pipe, so as to form one outlet for the flow of water. The ram and buckets move up and down together; the down stroke of the ram forces the water through the buckets, and the up stroke thereof forms a partial vacuum in the barrels, by which they are again filled with water; at the same time the buckets are forcing the water out of their respective barrels, and by these means a continuous stream of water may be raised and thrown.

1027.—WILLIAM ADAIR, of Liverpool, in the co. of Lancaster, for "*Improvements in pumps.*" Patent dated April 5, 1867.

This invention consists in constructing, as hereafter described, a double-acting pump, chiefly intended for use on board ship, but also applicable in mines, water-works, fire-engines, and for other purposes. The pump consists of a closed cylinder containing a spear box or plunger, of an open cylinder, and of a feed-pipe inserted at the bottom of the cylinders, and carried up either between them or outside, and having communication with the open cylinder at the bottom, and with the closed one near its top, the whole being connected together. The plunger consists of two cup leathers placed back to back, and is attached to an ordinary piston-rod. The top of the closed cylinder consists of a metal cover fitting closely round the plunger-rod, yet so as to allow of its slipping upon it when forced upward by the water to be discharged during the ascending stroke,

at the conclusion of which it again descends to its ordinary position, and rests upon the flange or rim at the top of the cylinder. It therefore acts both as a cover to the cylinder, and as a valve to allow of the discharge of the water; it also does away with any necessity for a stuffing-box, inasmuch as the discharging nozzle is placed some distance above it; it is, consequently, always under water while the pump is working, and thus effects between itself and the plunger the necessary vacuum for the supply of water on the upper side of the plunger to be discharged during the upward stroke.

1029.—Henry Wilson, of Stockton-on-Tees, in the co. of Durham, for "*Improvements in cocks or valves for discharging water, oil, and other fluids or gases.*" Provisional protection only obtained. Dated April 6, 1867.

In performing this invention, the key or spindle of the cock or valve is constructed with a screw of quick traverse upon it (say double, treble, or quadruple), which works in a corresponding nut fixed in the barrel of the cock or valve. On the said key or spindle is fixed one end of a helical spring; the other end of the said spring is fixed to the barrel of the cock or valve, and the pressure of the spring is so arranged as to keep the cock or valve constantly shut; and, in order to open the cock or valve, sufficient power must be applied to overcome the resistance of the spring; as long as such power is applied, the cock or valve remains open, but as soon as such power is withdrawn the cock or valve is instantly closed by the spring.

1037.—Graham Stuart, of Sheffield, in the co. of York, for "*Improvements in taps and valves used for regulating or restraining the flow of water or other liquids, steam, or gases.*" Provisional protection only obtained. Dated April 6, 1867.

The outer portion of this tap or valve is made in two parts, each part being a hollow tube or pipe, and terminating at one end in a semi-spherical or cup-shaped concavity, one concavity being slightly larger than the other. Each concavity is surrounded at its greatest diameter by a flange, by which flanges the two parts are fastened together by screws and nuts. Within this concavity is a ball formed so that every section taken at right angles to its axis shall be a true spiral. The ball works on an axis projecting through the sides of the concavity at right angles to the direction of the before-mentioned tubes or pipes. To one end of the axis is attached an ordinary handle or lever for turning the said ball to open or shut off the tap.

1040.—Clinton Edgcumbe Brooman, of the firm of Robertson, Brooman, and Co., of 166, Fleet Street, in the City of London, patent agent, for "*Improved means of producing oxygen.*" A communication. Patent dated April 6, 1867.

Starting with the idea that atmospheric air is the richest and most natural source of oxygen gas, a process for the production of this gas was described in the specification of a patent granted to A. S. Brooman, the 10th of January, 1866, No. 85, for an invention also communicated by the present inventors. In this preceding process oxygen was absorbed from the atmosphere by particular chemical compounds, and there were produced combinations not very stable, which have the property of readily giving off their oxygen at a greater or less temperature in presence of a current of steam.

The new process is founded on the same principle, and oxygen is taken from the atmosphere by means of the decomposition and recomposition of sulphuric acid. The principal feature of this process lies in the employment of oxide of magnesium, which as yet has not been used for this purpose; this oxide alternately absorbs and reabsorbs sulphurous acid, and thus permits, although indirectly, of taking from the atmosphere a part of the oxygen which it contains.

All the oxides or silicates of metals, such as the oxides of aluminium, iron, and zinc, and the silicates of alumina, for example, which at a dull or bright red heat cease to unite with sulphuric acid, decompose this acid into sulphurous acid and oxygen; the oxygen and the sulphurous acid thus generated are collected in vessels containing oxid or carbonate of magnesia. The sulphurous acid is thus transformed into sulphite of magnesia, while the oxygen set free is collected in a gasholder. The sulphite of magnesia produced by this reaction is heated in a retort and decomposed therein. The regenerated sulphuric acid on issuing from the leaden chamber is again decomposed into sulphurous acid and oxygen, and the operation may be continued as long as required.

1045.—William Robert Lake, of 8, Southampton Buildings, Chancery Lane, in the co. of Middlesex, consulting engineer, for "*An improved combined water-meter and force-pump.*" A communication. Patent dated April 6, 1867.

This invention relates to the adaptation of a force-pump to a water-meter, in order that the combination of the two principles developed by the two instruments may be productive of two results—viz., measuring, and at the same time, by the same motive power, elevating the fluid to a designated height. It will be admitted as a well-known fact that, at certain seasons of the year, and under certain circumstances, the pressure of the water from the reservoir is inadequate to elevate the fluid to certain desirable localities, consequently a great want of some simple mechanical power has long been felt to assist in elevating the fluid, and it is with a view of supplying this deficiency that this combination has been effected.

In this improvement in water-meters two cylinders and sliding valves are employed working in a valve-chamber common to both of them, the said cylinders and valve-chamber being arranged together in a box in whose rear side is placed the water-supply pipe. A crank-shaft, which is connected with the pistons by a yoke, gives motion through a worm and gear wheel to a dial, which indicates through a fixed index the quantity of water discharged.

1058.—John Lacey Davies, of the firm of John Davies and Son, of 4, St. Ann's Square, Manchester, in the co. of Lancaster, patent agent, for "*Certain improvements in the method of purifying smoke, and in apparatus connected therewith.*" A communication. Patent dated April 9, 1867.

The object of this invention is to prevent the expansion of all noxious and detrimental sooty or ashy matters and soluble vapours which commonly escape from fireplace or other chimneys into the open air. It consists in the purifying of the smoke by means of a shower or divided liquid injection, the downward speed of which would be greater than that of the smoke, and which is projected in the same direction, either vertically or obliquely.

The invention may be applied to all sorts of fireplaces by directing the smoke downwards from the upper extremity of the apparatus, inside of which it descends and receives the liquid shower, and escapes afterwards by the lower part into the chimney, as near as possible to which the apparatus is always set up and made to communicate. The solid and soluble smoky matters, in their course through the chimney, are carried along by the liquid shower and deposited in the lower part of the apparatus, communicating with a recipient from whence they may be easily extracted.

1066.—James Robert Napier, marine engineer, and William John Macquorn Rankine, civil engineer, both of Glasgow, in the co. of Lanark, N.B., for "*Improvements in valve-seats.*" Patent dated April 10, 1867.

This invention relates to seats for such valves for engines driven by steam, or other vapour or gas, as act by sliding either on straight or on curved surfaces, and it consists, according to one modification, in making any such seat in such a manner that, whilst the parts of it which lie between the exhaust-port and the cylinder-ports remain fixed, those parts which lie at the other sides of the cylinder-ports are moveable. The last-mentioned parts of the valve-seat being moved by the engine, contract and enlarge the cylinder-ports alternately, and thereby affect the duration of admission of the steam in a way which enables variable expansion gear to be used more conveniently and advantageously than heretofore. The moveable parts of the valve-seat may be connected so as to move together, or they may move independently. It is preferred to use, as a means of moving them together, an eccentric upon a rotating shaft. When either of the moveable parts of the valve-seat is moved so as to contract its port, the cutting off of the steam takes place earlier in the stroke than it would otherwise do without affecting the release or the compression.

1071.—Francis George Fleury, of Southwark, in the co. of Surrey, engineer, for "*Improvements in machinery or apparatus for measuring fluids.*" Patent dated April 11, 1867.

This invention relates to that description of machinery or apparatus for the purpose named, in which two cylinders, placed on the same axial line or otherwise, are employed. According to this invention, each cylinder is fitted with a piston, provided with metallic or other packing, and having its rod passing freely through a fluid-tight packing in the piston, which latter is capable of moving freely endwise of the cylinder for a certain distance without giving motion to the piston-rod, such distance being regulated by collars formed with or attached to the rod at each side of the piston, so that, after moving the required portion of its travel, the piston comes in contact with one or other of the collars, and carries the rod with it until its motion is reversed. The cylinders are placed horizontally, and each piston-rod of the one cylinder gives motion direct, or in the same direction as its own motion, to the valve for regulating the admission and emission of fluid to and from the other cylinder; the piston-rod of which latter cylinder gives motion in turn to the valve of the first-named cylinder by means of a lever in direction contrary to its (the piston's) own line of travel. The quantity of fluid passed through the apparatus may be indicated by means of a counter which shall register the number of strokes of the pistons in the ordinary or any other convenient manner.

1123.—George Simpson, of Glasgow, in the co. of Lanark, N.B., civil and mining engineer, for "*Improvements in machinery for actuating tools used in mining or excavating or boring, part of the improved machinery being also applicable for actuating mine and other pumps.*" Patent dated April 16, 1867.

This invention, the details of which require to be illustrated by drawings, consists particularly in the applying to such machinery separate steam-regulating and exhaust-valves with their actuating details, as described.

APPLICATIONS FOR LETTERS PATENT.

3474.—Cornelius Kerby, of St. Dunstan's Hill, in the City of London, for "*Improvements in the combination of materials to be used for filtering liquids.*" Dec. 6, 1867.

3491.—Charles Mathew Barker, of 12, Kennington Park Road, in the co. of Surrey, engineer, for "*Improvements in socket and flange spigot-pipes.*" Dec. 7, 1867.

3501.—Henry Bessemer, of Queen Street Place, Cannon Street, in the City of London, for "*Improvements in the manufacture of fire-bricks, tiles, and solid or hollow fire-lumps, and in the manufacture of retorts, pipes, crucibles, or other hollow vessels or moulds required to resist a high degree of heat, and also in the manufacture of ornamental bricks, tiles, quarries, trusses, bosses, vases, busts, figures, columns, capitals, bases, cornices, copings, tablets, finials, and other articles of an ornamental character employed in building and in architectural decorations.*" Dec. 9, 1867.

3503.—Cornelius Kerby, of St. Dunstan's Hill, in the City of London, for "*Improved apparatus for filtering liquids.*" Dec. 10, 1867.

3527.—John Ward, of Port Glasgow, in the co. of Renfrew, N.B., for "*Improvements in lamps to be used under water.*" Dec. 12, 1867.

3531.—Ephraim Death, of Leicester, in the co. of Leicester, engineer, for "*Improvements in steam-pumps.*" Dec. 12, 1867.

3554.—Henry Atkinson, of 33, Wharf Road, City Road, in the co. of Middlesex, for "*Improvements in gas-retort ovens and furnaces.*" A communication. Dec. 14, 1867.

3563.—Edward Hammond Bentall, of Heybridge, near Maldon, in the co. of Essex, agricultural implement manufacturer, for "*Improved*

apparatus for controlling the draught of water from constant-supply pipes." Dec. 14, 1867.

3572.—JAMES EGLINTON ANDERSON GWYNNE, of Essex Street Works, Strand, in the co. of Middlesex, engineer, for "*Improvements in sinking tubes or cylinders for obtaining and raising water, and in the apparatus for effecting the same.*" Dec. 16, 1867.

3578.—WILLIAM JACKSON and JOSEPH DYER, of Birmingham, in the co. of Warwick, for "*Valves and valve-cocks.*" Dec. 16, 1867.

3587.—ERNEST MARIE DU BOYS, of Paris, France, government engineer, for "*Improvements in liquid-meters or apparatus for measuring and registering the volume of water or other liquid flowing under pressure through pipes or ducts.*" Dec. 17, 1867.

3590.—WILLIAM ARMAND GILBEE, trading under the name or style of L. de Fontainemoreau, of 4, South Street, Finsbury, in the co. of Middlesex, patent agent, for "*Improvements in the method of and apparatus for raising water.*" A communication. Dec. 17, 1867.

3591.—WILLIAM EDWARD NEWTON, of 66, Chancery Lane, in the co. of Middlesex, civil engineer, for "*An improved method of and apparatus for the manufacture of tinned leaden pipes.*" A communication. Dec. 17, 1867.

GRANTS OF PROVISIONAL PROTECTION.

3361.—JAMES SUTCLIFFE SMITH, of Bacup, in the co. of Lancaster, manufacturer, for "*Certain improvements in apparatus for ventilating buildings and other similar purposes.*" Nov. 27, 1867.

3369.—MATTHEW HENRY LARMUTH and LUKE HAMILTON LARMUTH, of the firm of Thomas Larmuth and Co., of Salford, in the co. of Lancaster, engineers, for "*Improvements in water-meters and water-power engines.*" Nov. 28, 1867.

3397.—JOHN JOSEPH PARKES, of London Street, Paddington, in the co. of Middlesex, gas engineer, for "*Improvements in the means of ventilating rooms and buildings, and in apparatus for the same.*" Nov. 29, 1867.

3404.—SAMUEL EDWARD TYRRELL STEANE, of Barking, in the co. of Essex, soap manufacturer, for "*Improvements in globes and glasses for the transmission of artificial and other light.*" Nov. 30, 1867.

3415.—EDWARD PRICE, engineer and manager of the Hampton Court Gas Company's Works, Hampton Wick, in the co. of Middlesex, for "*Improvements in apparatus for regulating the supply of gas to burners.*" Dec. 3, 1867.

3430.—JOHN HAYS WILSON, of the firm of John Hays Wilson and Co., of Liverpool, in the co. of Lancaster, brassfounders and ships' ironmongers, for "*Improvements applicable to water-closets and pumps connected therewith, which latter improvements are applicable to lift-pumps generally.*" Dec. 3, 1867.

3466.—ARTHUR CHARLES STERRY, of Woodgate Cottage, Ewell, in the co. of Surrey, for "*Improvements in engines worked by heated air or gas.*" Dec. 5, 1867.

3474.—CORNELIUS KERBY, of St. Dunstan's Hill, in the City of London, for "*Improvements in the combination of materials to be used for filtering liquids.*" Dec. 6, 1867.

NOTICES TO PROCEED.

2245.—CHARLES DENTON ABEL, of 20, Southampton Buildings, Chancery Lane, in the co. of Middlesex, patent agent, for "*Improvements in combined gas and air engines.*" A communication. Aug. 3, 1867.

2254.—WALTER WATSON HUGHES, of 14, Queen's Gate, Hyde Park, in the co. of Middlesex, for "*Improvements in apparatus for propelling vessels and pumping or raising water.*" Aug. 3, 1867.

2278.—FRANCIS CARR MARSHALL, of Jarrow, in the co. of Durham, and HUGH STEWART, of Liverpool, in the co. of Lancaster, for "*Improvements in machinery or apparatus for raising or forcing water or other fluids, and for the transmission of the motive power of water, steam, or other fluid or gases.*" Aug. 7, 1867.

2300.—JOHN DAVENPORT, of Bradford, in the co. of York, machine maker, and JOHN KITSON, of Bradford aforesaid, pattern maker, for "*Improvements in or applicable to slide-valves for admitting the flow or passage of steam, water, or other fluids and gases when pressed.*" Aug. 10, 1867.

2351.—AUGUSTUS FRASER BAIRD, of Pimlico, in the co. of Middlesex, lieutenant-colonel in the Bengal Staff Corps, for "*An improved earth-closet.*" Aug. 15, 1867.

2402.—THOMAS SAULT, of New Haven, Connecticut, U.S.A., now of 8, Southampton Buildings, Chancery Lane, in the co. of Middlesex, engineer, for "*Improvements in slide-valves.*" Aug. 22, 1867.

3305.—HENRY JAMES and EDWARD DREWETT, of Weybridge, in the co. of Surrey, for "*Improvements in water-closets.*" Nov. 21, 1867.

PATENTS WHICH HAVE BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £50 BEFORE THE EXPIRATION OF THE THIRD YEAR.

2932.—JOHN KISSACK, "*Improvements in warming and ventilating apparatus.*" Nov. 24, 1864.

2960.—THOMAS GREENHALGH, "*Certain improvements in steam-engines and rotary pumps.*" Nov. 28, 1864.

3020.—JOHN GANO WINTER, "*Improvements in revolving retorts, and in the mode of applying heat to the same, designed for producing oil from coals, shales, cannels, and other substances, or for distilling oils.*" Dec. 5, 1864.

3022.—RICHARD TYE, "*Improvements in sliding gaseliers, gas pendants, and gas-lamps.*" Dec. 5, 1864.

3039.—JOHN KEELING, "*Improvements in apparatus for regulating the supply of gas.*" Dec. 6, 1864.

3042.—GEORGE TOMLINSON BOUSFIELD, "*Improvements in the manufacture of illuminating gas.*" Dec. 6, 1864.

PATENTS WHICH HAVE BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £100 BEFORE THE EXPIRATION OF THE SEVENTH YEAR.

2982.—CHARLES WILLIAM SIEMENS, "*Improvements in fluid-meters.*" Dec. 5, 1860.

Legal Intelligence.

THE PUBLIC LIGHTING QUESTION AT GRAVESEND.

TOWN HALL, GRAVESEND—MONDAY, OCT. 28.

(*Before the Hon.* GEORGE DENMAN, *M.P., Q.C., and two Assessors.*)

THE GRAVESEND IMPROVEMENT COMMISSIONERS AND THE GRAVESEND AND MILTON GAS COMPANY.

Mr. MICHAEL appeared for the company, and Mr. PHILBRICK for the commissioners.

Mr. MICHAEL said the company for which he appeared—the Gravesend and Milton Gas Company—had been in the habit of supplying the Improvement Commissioners with gas for the public lighting of the town at a certain price, but that price not being satisfactory, they had applied for an increase thereon, to which the commissioners demurred. Under the provisions of the Company's Act, 26 Vic., c. 57, in case of dispute between them and the commissioners the matter was to be referred to arbitration under the Companies Clauses Act, which was incorporated in the special Act. The parties were therefore now before the learned umpire under a Deed of Submission to ascertain the price at which the company should be called upon to supply the public lamps of the town per annum.

Mr. PHILBRICK said the onus was upon his learned friend, Mr. Michael to justify the charge which the company either had named or were about to name.

The UMPIRE said, before going into that matter, there were two or three questions which he must ask, because this was a most unusual order of reference, and, as far as he could gather from it, it was left quite undecided whether the ordinary mode of proceeding should be adopted, or whether by consent they might take some other course. Looking at the document generally, he should have imagined that the two arbitrators were first to deal with the case, and that only in the event of their disagreeing he would be called upon to act. Unless there were some consent to the contrary these gentlemen ought to endeavour to arbitrate in the matter and decide between the parties; should they fail in doing so, he must hear the whole case *de novo*.

Mr. MICHAEL said the view which his clients took was that the arbitrators sitting with the learned umpire would hear the case as though they only had been called in, and that in the event of their disagreeing the question would then be ready for the adjudication of the learned umpire without the trouble and expense of a fresh investigation.

The UMPIRE assumed that he must take it the arbitrators had not heard the case, and had not disagreed.

Mr. MICHAEL said nothing had been done.

The UMPIRE said the position of things would therefore be, that with the consent of all parties the case would be heard once for all, and in the event of the arbitrators disagreeing he would have to decide with the same elements before him as those upon which they had failed to arrive at a settlement.

Mr. MICHAEL said that was his view at the present time.

After some further conversation on the subject the course to be adopted was agreed upon, and

The UMPIRE said: I will recite in my award that "the parties on both sides and the arbitrators agree that the case shall be heard before me once for all in the presence of the arbitrators acting as assessors; that the award shall be made by me only as though the arbitrators had disagreed, and that the arbitrators fees shall be included in the costs of the award."

Mr. MICHAEL said he must now state that it would be folly for him to attempt to proceed with the case that day, owing to the absence of the principal witness for the company. This was an inquiry under two, or he should rather say three Acts of Parliament. The Improvement Commissioners of the town of Gravesend were constituted under an Act of Parliament passed in 1856, and a part of their duty was to light the streets of the town with gas, and under the special Act of the Gravesend and Milton Gas Company that service had been performed.

The UMPIRE inquired how long the Gravesend Improvement Commissioners had been in existence.

Mr. MICHAEL said he did not quite gather the fact from the Act before him, which appeared to be a renewal of a former Act.

Mr. PHILBRICK said the 3 and 4 William IV., c. 1, was the first Act under which the commissioners were incorporated.

Mr. MICHAEL said, by the Companies Act, which was the 26 Vic., c. 57, they were bound, upon the request of the commissioners, to supply gas to the public lamps, such lamps to be placed at distances not exceeding 30 yards apart, for such price and upon such terms as might be agreed upon between them and the commissioners, and, in case of dispute, upon such terms as might be settled by arbitration under the Companies Clauses Consolidation Act, 1845. A dispute had arisen as to the price to be charged by the company, and all the necessary steps had been taken to bring the question before the present tribunal for adjudication. But unfortunately he was compelled to ask for an adjournment under very exceptional circumstances. The manager of the company, who had charge of the books, and who would be the principal witness, had started on Saturday morning with the books to the office of the company's solicitor, and since that time had not been heard of. One book had been recovered from a ditch on the other side of the Thames, and the company hoped to be able to produce the witness and the remainder of the books if the inquiry was adjourned. Under these circumstances he would agree to pay the costs of the day.

Mr. PHILBRICK said he could not, of course, resist the application, for he thought his learned friend had made out a case for an adjournment. On the part of those for whom he (Mr. Philbrick) appeared, and who represented the ratepayers, he must say that it would be a matter of great regret if the books were not forthcoming, because they were of vital importance to a full and impartial inquiry. Probably it was a common loss to both sides: he was quite sure his friend could not make out his case without them. The application was therefore one to which he was afraid he must assent.

The UMPIRE said the only fear was whether, one book having been found in a ditch, there was any reasonable probability of the others being forthcoming.

Mr. PHILBRICK wished it to be understood that he did not for one moment insinuate a doubt of the correctness of his learned friend's statement, but he should like to know, in order to guide him in the future proceedings, whether there was not some accountant or person in the service of the company who had charge of other books who could give them the needful information, so that, in the event of these particular books not being forthcoming, they might be able still to go on with the inquiry.

Mr. MICHAEL said he would undertake that, if the particular book in question was not forthcoming, the company would be able to make as complete and accurate a statement of their affairs to enable the learned

umpire to test their accounts as if that book was still in their possession. As far as he knew at present, the most important book missing was that which was technically known as the carbonizing book, which contained an account of the quantity of coal used and the quantity of gas produced for the last year. The proceedings of one year, however, were so much like the proceedings of another year that the company would be able, he believed, to supply the deficiency, but they were not in a position to do it at the present sitting. He undertook to say that they would be able fully, on a future occasion, to satisfy the court as to what, in their view, the price of gas should be, as though the missing book were forthcoming.

The UMPIRE inquired whether anything had been done to approximate to a price as between the parties, or whether they were entirely at arm's length.

Mr. MICHAEL said they were entirely at arm's length, although the question between them was really a very simple one. He did not wish, at this stage of the proceedings, to go into the matter, but he might briefly state, in order to put the umpire into possession of the main facts of the case, that up to last year the charge for the public lamps had been £3 5s. each, the lamps being lighted for 305 days in the year, and burning for ten hours per day of twenty-four hours, each lamp consuming 5 cubic feet of gas per hour. This made a total annual consumption per lamp of 15,250 cubic feet, and the company finding their contract was very unprofitable, asked for an increase of 5s. per lamp, which was equivalent to 4d. per 1000 feet; so that whereas the charge had been 3s. 3d., they required a payment of 3s. 8d. per 1000. This was the real gist of the question, and to their request they had received a denial couched not in the most courteous language. There were other difficulties in connexion with the question, so that it was felt better that independent parties should be called in to arbitrate in the matter.

Mr. PHILBRICK said he was afraid the question would not be embraced in such limits as his friend had intimated.

The UMPIRE remarked that Mr. Michael had merely given these as samples of the questions that would arise. He was not opening his case in any way.

Mr. PHILBRICK said that as the case was not going on, the statement of his learned friend ought not to go before the public alone. He would, therefore, state that on the 12th of October, 1865, the commissioners offered to pay 3s. 9d. per 1000 feet for the gas, which the company refused, so that the learned umpire would see there were other elements in the case. He hoped the company would try to secure the attendance of their manager at the proper time.

Mr. MICHAEL said if he was not forthcoming, the company would produce books which would enable them to go on with the case.

The UMPIRE inquired when the company would be prepared to proceed, and suggested the following Wednesday.

Mr. MICHAEL replied that in the absence of the person most conversant with all the accounts, and therefore best able to give evidence as to the cost at which gas could be provided, they must procure a witness who could give legal evidence after an investigation of their books, and they could hardly hope to do that within the next thirty hours.

Mr. PHILBRICK suggested that if it became necessary to call in a person to go through the books, it would be better that some one should be associated with him on the part of the commissioners, so that no dispute should hereafter arise upon the figures. If two accountants were thus employed and could agree upon the figures, the court would then deal at once with the question of principle; otherwise when the case came on again he might have to ask that some one should be appointed to examine the books on the part of his clients.

Mr. MICHAEL thought it would be well if the learned umpire would lay down what course the inquiry should take. The company would then be quite ready to agree to the proposition that some gentleman should go through the books with a view to that inquiry; but he objected to the books being gone through generally. The company were quite as anxious as the other side to have the matter settled.

The UMPIRE said he could not, until he knew something of the case, prescribe what course ought to be pursued or what evidence he should require. He inquired whether the amount in dispute was a substantial sum.

Mr. PHILBRICK said the sum was not very large—about £100 a year; but the question involved a great deal more in reality, for it was a question not only as to what should be paid for the gas supplied to the public lamps, but for gas supplied to the public generally.

After some further conversation it was agreed that the inquiry should be adjourned until the following Thursday.

SECOND DAY—THURSDAY, OCT. 31.

Mr. MICHAEL said the parties were present under a Deed of Submission, and without troubling the learned umpire by reading the whole of that deed, he would state briefly that the object of the inquiry was to determine what should be paid by the Town Commissioners for the gas supplied by the company to the public lamps, of which, he believed, there were about 300.

The UMPIRE remarked that the form in which it should be put was, how much per lamp, so that if there was any variation in the number of lamps it would make no difference in the award.

Mr. MICHAEL was about to call attention to what he considered a little inaccuracy in the Deed of Submission. It stated that the object was to determine the terms upon which the company should "supply the public lamps of Gravesend and Milton with gas." The number of those lamps might vary year by year, and therefore the award should be the price at which each lamp should be supplied.

The UMPIRE thought it would be quite sufficient if they both understood it, that the award should state at how much per lamp the gas should be supplied.

Mr. MICHAEL said that would be sufficient if all the lamps were burning the same quantity of gas, but he understood that there were a few 3-feet burners.

Mr. PHILBRICK said he should have to ask, on the part of the commissioners, when the umpire came to fix the price, that he should state at how much per 1000 feet the gas should be supplied; or, at all events, to determine upon some convenient unit.

The UMPIRE said it struck him that the form in which it should be done was this:—It appearing from the Deed of Submission that a dispute having arisen as to the price at which the company should supply the public lamps of Gravesend and Milton with gas, such lamps being furnished with 4-feet regulation burners, and lighted one hour after sunset and extinguished one hour before sunrise for so many days in the year, the object would be fully accomplished by an award stating that the Improvement Commissioners should pay to the said company so much per 1000 feet for all the gas supplied to the public lamps.

Mr. MICHAEL said that would open another subordinate but very important question—viz., how that quantity was to be arrived at.

The UMPIRE said he had nothing to do with that. His inquiry was limited to the price. If the quantity was to be measured in any particular way involving extra expense, the price might not be large enough, and that would be an element after having fixed the price; but the way in which the price should be fixed would be sufficiently clear by stating that all the public lamps to be supplied with gas shall be paid for at the rate of so much per 1000 feet.

Mr. MICHAEL said that would hardly meet the exigency of the case, and he was about to show how the difficulty would arise. How were they to arrive at the solution of the question as to the quantity burned by each individual lamp per night? If they took it as a fixed quantity of 4 feet for so many hours during the 365 days, he agreed that they had obtained a solution at once; but if they had to estimate how much was consumed by 4-feet burners night by night, and not take 4 feet as the actual quantity, but only as the calculated quantity, and that quantity altered by the consumption of each lamp, there were only two ways of arriving at a conclusion—either they must adopt what was called the system of average meter indication, or they must affix a meter to each lamp. If the commissioners were prepared to put a meter to each lamp there would be no difficulty on the part of the company as to such an arrangement. But if, on the other hand, there was to be one meter to ten lamps, the one metered lamp being taken as the standard of the other nine, there would be considerable difficulty, because, unless the lighting and extinguishing were properly regulated, it might be so managed that the metered lamp should burn so much less, and the unmetered lamps so much more, than the prescribed quantity.

The UMPIRE, referring to the Deed of Submission, said the terms were, "Such lamps being furnished with 4-feet regulator burners"—whatever that might mean.

Mr. PHILBRICK said it meant burners which could only consume 4 feet per hour, but might consume less.

Mr. MICHAEL said that depended upon the way the tap was turned.

The UMPIRE: "Lighted and to be supplied every night from one hour after sunset and kept continually burning till one hour before sunrise." Therefore it is to be assumed that the commissioners use the lamps to that extent and destroy gas to that extent.

Mr. MICHAEL: Then there is to be no meter indication at all, but the burners are to be fixed 4-feet burners, and lighted so many hours.

The UMPIRE: That is the basis here.

Mr. PHILBRICK: I agree that that is to be the basis—4-feet burners, which, at the maximum, will consume 4 feet, but may burn less.

The UMPIRE: It is to be assumed against you that all that is done.

Mr. PHILBRICK: Yes; and they are to be kept burning so many nights, excluding three nights before, the night of, and the night after every full moon—that is, 60 nights in a year; therefore the consumption will extend over 305 nights.

Mr. MICHAEL: Then we agree to that.

The UMPIRE: With these fixed quantities.

Mr. PHILBRICK: It is near enough for the purpose of admission, but every four years there is one day more in February.

Mr. MICHAEL: There will be only 300 nights—they are lunar months.

The UMPIRE: I am not scientific enough to understand the expression, or what is the effect of "4-feet regulation burners."

Mr. MICHAEL: They are 4-feet burners with a regulating tap to them.

The UMPIRE: What is a regulator.

Mr. PHILBRICK: A regulator may be anything.

The UMPIRE: You mean that it prevents the burner burning more than 4 feet—but in what time?

Mr. PHILBRICK: An hour. I believe, speaking very roughly, it is something like the safety-valve of an engine—a throttle-valve.

The UMPIRE: They are burners which prevent more than 4 feet an hour being consumed, and they are to be paid for at some reasonable rate, which is to be calculated on the assumption also that they are not to be lighted for more hours than here respectively mentioned.

Mr. MICHAEL: But we had better determine at once what the number of days is.

The UMPIRE: I am coming to that, if we can agree to this simple point.

Mr. MICHAEL: Quite so. First of all, it must be 300 days.

The UMPIRE: Let me first take down what is new to me. The regulation burner is a 4-feet burner, and is a burner which prevents the lamps burning more than 4 cubic feet per hour. These lamps are to be lighted one hour after sunset and extinguished one hour before sunrise. How many hours is that?

Mr. PHILBRICK: It is a matter which has been worked out by scientific authorities. I believe Clegg's tables are the authority.

The UMPIRE: I do not want to wade through them. I want to apply this scientific knowledge to the order of reference.

Mr. PHILBRICK: I believe the result is worked out. We shall be quite content to abide by Clegg's tables. It is agreed to take 300 days.

The UMPIRE: How many hours?

Mr. MICHAEL: That is a shifting quantity. In order to arrive at the point, we have made out a table of when we are to begin lighting and when we are to begin extinguishing, which gives an average of 10 hours 22 minutes as the time, carried over the whole year, during which the lamps will be burning.

The UMPIRE: Is that agreed to? "Sunset and sunrise" is rather indefinite.

Mr. PHILBRICK: According to the almanac it is a definite quantity. I believe, if lighted at sunset and extinguished at sunrise, the total number of hours in the year, mean average, would be 4290. That would be for every day in the year.

The UMPIRE: It must be a matter of pure calculation, but still it is a rather complicated sum.

Mr. MICHAEL: We make it 3112½ hours. We are willing to give up on both sides. Our figures are 12,450 feet.

The UMPIRE: One of the assessors tells me he has worked it out, and he makes it 11,902 feet.

Mr. PHILBRICK: Our calculation is $11{,}715\frac{33}{100}$ of feet. They are all very near for average calculations.

The UMPIRE: Shall we call it 12,000?

Mr. MICHAEL: We should lose considerably in that case. If we take the price of gas at 4s. 6d. we should lose 2s. 1d. on each lamp every year by giving up 450 feet. Our number of hours is 10 hours 22½ minutes per night, equal to 3112½ hours a year.

The UMPIRE: This is rather curiously expressed, "omitting the three

nights immediately before, the night of, and the night after the full moon." It does not mean that you are to omit three nights before?

Mr. MICHAEL: Yes, it does.

The UMPIRE: Why three nights before and only one after?

Mr. MICHAEL: Because the three nights before the full moon are so much lighter in proportion, the moon rising earlier.

After some time spent in conversation,

Mr. MICHAEL said he was willing to agree that the number of feet of gas consumed per lamp per annum should be taken at 11,900, although by the calculations his clients had made of the number of hours they would be lighted, according to the terms of the order of reference, it would be 12,450.

Mr. PHILBRICK said he could not make more of it than 11,700 feet, but he was willing it should be taken at 11,900.

The UMPIRE said the question now was how much should be paid for the quantity of gas so supplied.

Mr. MICHAEL said that was the question which was left to the umpire. When they last met he shortly brought before the court the fact that by the Act 19 Vic., c. 26, which amended the 3 and 4 Vic., c. 60, and the 3 and 4 Wm. IV., c. 51, commissioners were appointed for, amongst other purposes, lighting the town of Gravesend with gas, and by the 26 Vic., c. 57 (local and personal), the Gravesend and Milton Gas Company were incorporated for the purpose of lighting the parishes of Gravesend, Milton, and Northfleet. By the 2nd clause of that Act the Companies Clauses Consolidation Act, 1845, and the Gas-Works Clauses Act, 1847, and the Lands Clauses Consolidation Act, with the Act for the amendment of the last-named Act, 1860, were incorporated. In the preamble of the Act it was recited that the capital of the company was £30,000, which was money previously expended by a former company in erecting works and laying down the necessary mains for the supply of gas. Power was also given in the Act to raise further capital and to borrow money, but this provision did not come into question now, as no further works had been constructed and no further capital had been raised, nor had any money been borrowed. The 17th clause was the clause which determined the capital of the company, and it was there enacted that the capital of the company should be the existing share capital of £30,000, divided into 1500 shares as therein named. The 19th clause gave power to raise additional capital, and the subsequent clause directed how such additional capital should be divided into shares, and how those shares should be issued. The 23rd clause limited the dividends of the undertaking, so far as regarded any new shares, to the rate of 7½ per cent.

The UMPIRE: There is no limit as regards the old shares?

Mr. PHILBRICK: Yes; there is a limit in the Gas-Works Clauses Act.

Mr. MICHAEL: With respect to the old shares, the provisions of the Gas-Works Clauses Act will be important in the consideration of the question.

The UMPIRE: Are there any new shares?

Mr. MICHAEL said there were no new shares, and there had been no money borrowed. The 29th and 30th sections of the Gas-Works Clauses Act enacted that, "with respect to the amount of profit to be received by the undertakers when the gas-works are carried on for their benefit, be it enacted as follows:—The profits of the undertaking to be divided amongst the undertakers in any year shall not exceed the prescribed rate, or where no rate is prescribed they shall not exceed the rate of £10 in the £100 by the year on the paid-up capital in the undertaking, which in such case shall be deemed the prescribed rate, unless a larger dividend be at any time necessary to make up the deficiency of any previous dividend which shall have fallen short of the said yearly rate." Then the 31st section directed what should be done when the profits exceeded the amount limited:—"If the clear profits of the undertaking in any year amount to a larger sum than is sufficient, after making up the deficiency in the dividends of any previous year as aforesaid, to make a dividend at the prescribed rate, the excess beyond the sum necessary for such purpose shall from time to time be invested in Government or other securities; and the dividends and interest arising from such securities shall also be invested in the same or like securities, in order that the same may accumulate at compound interest until the fund so formed amounts to the prescribed sum, or if no sum be prescribed, a sum equal to one-tenth of the nominal capital of the undertakers, which sum shall form a reserved fund to answer any deficiency which may at any time happen in the amount of divisible profits, or to meet any extraordinary claim or demand which may at any time arise against the undertakers; and if such fund be at any time reduced, it may thereafter be again restored to the said sum, and so from time to time as often as such reduction shall happen." Then there was a provision as to how the reserve-fund should be invested and acted upon in certain contingencies. By the 38th section it was provided—"And with respect to the yearly receipt and expenditure of the undertakers, be it enacted, That the undertakers shall, in each year after they have begun to supply gas under the provisions of this or the special Act, cause an account in abstract to be prepared of the total receipts and expenditure of all rents or funds levied under the powers of this or the Special Act for the year preceding, under the several distinct heads of receipt and expenditure, with a statement of the balance of such account duly audited and certified by the chairman of the undertakers, and also by the auditors thereof, if any; and a copy of such annual account, if the gas-works be situated in England or Ireland, shall be transmitted, free of charge, to the clerk of the peace for the county in which the gas-works are situate, and if the gas-works be situated in Scotland such copy shall be transmitted, free of charge as aforesaid, to the sheriff clerk of such county, and such transmission shall be made on or before the 31st day of January in each year, under a penalty of £20 for each default; and the copy of such account so sent to the said clerk of the peace or sheriff clerk shall be kept by him, and shall be open to inspection by all persons at all seasonable hours, on payment of 1s. for each inspection." Going back to the 34th section, he would call attention to the terms—"If in any year the profits of the undertaking divisible amongst the undertakers shall not amount to the prescribed rate, such a sum may be taken from the reserved fund as, with the actual divisible profits of such year, will enable the undertakers to make a dividend of the amount aforesaid, and so from time to time as often as the occasion shall require;" and according to the 35th section—"In England or Ireland the court of quarter sessions, and in Scotland the sheriff, may, on the petition of any two gas ratepayers within the limits of the special Act, nominate and appoint some accountant or other competent person, not being a proprietor of any gas-works, to examine and ascertain, at the expense of the undertakers (the amount of such expense to be determined by the said court or sheriff), the actual state and condition of the concerns of the undertakers, and to make report thereof to the said court at the then present or some following sessions or to the sheriff; and the said court or sheriff may examine any witness upon oath touching the truth of the said accounts and the matters therein referred to; and if it thereupon appear to the said court or sheriff that the profits of the undertakers for the preceding year have exceeded the prescribed rate, the undertakers shall, in case the whole of the said reserved fund has been and then remains invested as aforesaid, and in case dividends to the amount hereinbefore limited have been paid, make such a rateable reduction in the rate for gas to be furnished by them as in the judgment of the said court or sheriff shall be proper, but so as such rates, when reduced, shall ensure to the undertakers (regard being had to the amount of profit before received) a profit as near as may be to the prescribed rate." These were all the clauses of the Act to which it was necessary to call attention. From what he had stated, therefore, it would be seen that, according to their own Act, the capital of the company was £30,000, and that upon that capital, according to the Gas Clauses Act, they were entitled to divide among their shareholders the sum of £3000 per annum, if their profits were sufficient for the purpose.

The UMPIRE: Is that by the old Act?

Mr. MICHAEL: No; according to the clauses I have just read to you.

The UMPIRE: The 38rd section says, with reference to the reserve-fund—"When such fund shall, by accumulation or otherwise, amount to the prescribed sum, or one-tenth of the nominal capital of the company, as the case may be, the interest and dividends thereon shall no longer be invested, but shall be applied to any of the general purposes of the undertaking to which the profits thereof are applicable."

That would seem to mean by virtue of some Act of Parliament applicable to the case.

Mr. MICHAEL: It means that it shall amount to the prescribed sum, if there be a sum prescribed; or that it shall be one-tenth of the capital where no sum is prescribed.

The UMPIRE: You say the capital of the company being £30,000, they have a right to divide £3000 a year as profit. Where do you get that from?

Mr. MICHAEL: From the 30th clause of the Gas-Works Clauses Act, which prescribes that the profits of the undertakers shall not exceed 10 per cent. per annum upon the paid-up capital. Our paid-up capital being £30,000, we have a right to £3000 in the shape of dividend.

Mr. PHILBRICK: That is the first great contest between us.

The UMPIRE: And you are entitled to make up the 10 per cent. if in any previous year you have not paid so much?

Mr. MICHAEL said if they had only paid 5 per cent. in the previous year, and in the current year the profits admitted of their paying 15 per cent. so as to make up the deficiency, they might do so. And in addition to paying 10 per cent., they were entitled to lay by a sum to form a reserve-fund equal to one-tenth of the paid-up capital. When that was done they were bound to apply all excess of profits to a rateable reduction in the price of gas. The object of these clauses was, to secure to the proprietors who invested their money in gas-works a fair return upon their capital, and at the same time, as they had a monopoly in the supply of gas, to regulate that monopoly in the interest of the public.

The UMPIRE: By the 31st section you are bound to create a reserve-fund, and you can go on adding to it until it amounts to £3000.

Mr. MICHAEL: It does not say that we shall have such a fund, but that we may if we will.

Mr. PHILBRICK: I read it that they must have it, but it does not matter.

Mr. MICHAEL: Practically the directors would, of course, lay by something if their profits were more than 10 per cent. in any one year.

The UMPIRE: I think it would be imperative that they should do so.

Mr. PHILBRICK: It does not really matter, because we are both agreed that they are entitled to a reserve-fund; but the great matter is with regard to the dividend.

Mr. MICHAEL: I think that is settled by the terms of the Act. The incorporation of the Gas-Works Clauses Act with our special Act places us in these circumstances, that we have a right to lay by £3000 for dividend and to have a reserve-fund. But in fact we shall be prepared to prove to you that we have never, since the Act was passed, paid the shareholders the prescribed rate of dividend in any one year.

The UMPIRE: And therefore not commenced a reserve-fund?

Mr. MICHAEL said they had no reserve-fund. By the 41st clause of their Act the maximum price of gas was 5s. per 1000 cubic feet, but the price actually charged by the company was 4s. 6d. The 46th section provided that the illuminating power of the gas should be equal to 14 sperm candles. This was a very important section, because upon the standard of illuminating power depended, more than upon anything else, the amount of profit which could be realized. The standard here prescribed was a very high one, necessitating the employment of a large proportion of cannel coal in the manufacture of gas; for, although 14 candles was named, the company would be obliged to manufacture the gas of a quality equal to 15½ candles to provide against the possibility of being below the standard from accidental circumstances over which, perhaps, they might have no control. The court was now in possession of all the incidents of the company *qua* the private consumers—they were obliged to supply gas of not less than 14 candles illuminating power, and at a price not exceeding 5s. per 1000 cubic feet.

The UMPIRE: Not only the private consumer, but also the public. You are not going to contend that the company are not bound to supply 14-candle gas to the public?

Mr. MICHAEL: All gas supplied to the public must be of 14 candles illuminating power, and as to the private consumer, the price must not exceed 5s. But there is a special clause with reference to the public lamps which I am now coming to, because the question is at what price the company can supply gas all round, so as to get the profit to which they were entitled.

The UMPIRE: I do not know what the contest is to be, but if you are going to contend that a charge of 4s. 6d. to private consumers is not a remunerative charge unless the public are charged at a higher rate, I think you will have a difficult task to perform. If you are only going to say that they have as much right to charge as much to the public as to the private consumer, that is another matter.

Mr. MICHAEL said that was his contention. He was about to show that by the 38th clause they were bound to place the public in as good a position as the private consumer, but that they were not bound to place them in a better position, because in doing so they would be doing an injustice to the private consumer. There was this special clause in the Act, showing how the commissioners were to be dealt with, and to that he would now direct attention. "The company shall and they are hereby required from time to time, and at such time as they may be called on to do so by any commissioners or other the persons charged by Act of Parliament with the lighting of any street or place within the limits of this Act, supply with gas all public lamps or burners within a distance of 80 yards from any of the mains of the company that may be required for lighting any such street or place, and provide and fix the lamps, lamp-posts, brackets, irons, and other apparatus required, and light and extinguish the lamps and keep the same in good repair and condition, for such price, upon such terms, and during such hours as shall be settled by agreement between the

company and the commissioners or other such persons charged as aforesaid with the lighting of any such street or place; and in case any dispute shall arise between such parties on any of such matters, the same shall be settled by arbitration under provisions in the Companies Clauses Consolidation Act, 1845, with respect to the settlement of disputes by arbitration; but the commissioners or such other persons may provide the lamps, lamp-posts, brackets, irons, and other apparatus required, and keep the same in good repair and condition, and employ persons for lighting and extinguishing the lamps or for any of those purposes."

The UMPIRE: The only question, then, that remains, with regard to which there is any dispute is as to the price which shall be paid by the commissioners.

Mr. MICHAEL: Quite so; and my argument will be to show that a dispute having arisen on this point, and the Act having been carried out with respect to referring that dispute to your arbitrament, what is the price which, taking our Act and the Act incorporated with it, the company can supply gas to all their customers, in order to provide the specified dividend of 10 per cent., and to enable them to lay by year by year such a sum as will create the reserve-fund contemplated by the Act.

The UMPIRE: As a question of fact, one would like to see in passing who light the public lamps, the commissioners or the company.

Mr. MICHAEL: They are lighted by the company.

The UMPIRE: Is the charge for lighting included in the price for supply?

Mr. PHILBRICK: You are to find both.

The UMPIRE: Does it say so?

Mr. PHILBRICK: Yes, specifically.

The UMPIRE: No; according to this deed one would gather that the commissioners were to light the lamps. "A dispute having arisen as to the price at which the company shall supply the lamps"—not supply and light.

Mr. MICHAEL: You will see that it is put in the alternative further on. You are to find at what price the company can supply the gas inclusive and exclusive of such charges.

The UMPIRE: What are those charges.

Mr. PHILBRICK: "Exclusive of all charges for lighting, extinguishing, repairing, and cleansing the lamps; and also as to the price to be so paid for the supply of gas, inclusive of such charges."

Mr. MICHAEL: So that it comes to this—you are to find the price for the gas, and the price for lighting and extinguishing.

The UMPIRE: As to the price for lighting and extinguishing, is there to be any dispute about that?

Mr. MICHAEL: I dare say not, because that is a sum of money paid out of pocket.

Mr. PHILBRICK: I have not seen the figures yet.

The UMPIRE: Do you mean to say that the men who light the lamps have nothing else to do?

Mr. MICHAEL: Our men do nothing but light the public lamps. It is a matter to be determined simply from our books, if the figures are in dispute.

The UMPIRE: There may be a dispute about it?

Mr. PHILBRICK: I think there may, but it will not be very much.

The UMPIRE: I am glad I interrupted, because it keeps one's mind upon the point. There is no other question in dispute, except the lighting and extinguishing, and the charge for the supply of gas?

Mr. PHILBRICK: No.

Mr. MICHAEL said up to June, 1866, the price charged for the public lamps was £3 5s. per lamp per annum. That was for the supply of gas and all the expenses incident to the cleaning, lighting, and extinguishing the lamps. The gas company, finding that they were severe losers by their contract with the commissioners for lighting the public lamps, and finding, moreover, that they were unable to pay their statutory dividend, wrote, on the 7th of June, stating that they had had the subject under consideration, and finding that the price hitherto charged was unremunerative, the future price would be £3 10s. per lamp per annum, subject to the same provisions as in the then existing contract. On the 11th of August they received from the clerk to the commissioners a letter in reply, enclosing a resolution come to by the said body, to the effect that in their opinion the proposed advance in price was unfair and unreasonable, and that unless the company should, at their next meeting, agree to continue the supply of gas on the same terms as before—viz., £3 5s. per lamp—the matter would be referred to arbitration. He would not trouble the court with the correspondence which afterwards took place, because it amounted to nothing except that, in the course of it, an offer was made by the commissioners to pay at the rate of 3s. 9d. per 1000 feet for gas supplied to the public lamps through 4-feet burners. The burners had hitherto been and still were 5-feet burners.

Mr. PHILBRICK said that must not be taken as an admitted fact.

Mr. MICHAEL said it could be no matter of dispute now, because the parties had arranged for 4-feet burners in the future. The learned umpire was now in possession of all the facts to the present time, and the question he had to decide was at what rate the gas so supplied should be charged. He was, no doubt, aware that for a long time a theory, which to a great extent had been carried out practically, that public bodies were entitled to some reduction in the price of gas, and that theory arose in this way. Throughout the country many gas companies were unincorporated, and depended for their existence upon the sufferance of the local authorities of the districts they supplied. They had no power to break up the streets and roads to lay down their mains for the supply of gas to private buildings, and under those circumstances they were in the habit of charging a lower price for the public lamps for the sake of obtaining the required permission, although the local authorities had in reality no legal power to give it. While there were no statutory obligations upon the gas companies, and while the provisions of the Gas Clauses Act did not apply to them, there was very little injustice in the matter; but when they came to stand in the position in which this company now stood, to charge a lower price to one consumer than another was to inflict an injustice on some one. If the price charged to the local authorities was not remunerative, a higher price must be charged to the private consumer than would otherwise be necessary, and the public were deprived of that which they otherwise would have when the statutory dividend of the company had been reached, and their reserve-fund fully made up—viz., a reduction in the charge. It followed, therefore, that, supposing the company charged to the public body 3s. 3d. or 3s. 9d. per 1000 cubic feet, and charged to the private consumer 4s. 6d., the private consumer was taxed more than he otherwise would be if the public lamps were not supplied at a price below that which he was called on to pay. It was so in the present instance, and he had yet to learn why one class of the community should be more highly taxed for the use of a commodity than another, for it necessarily followed that if the charge in the one case was unremunerative, the difference was made up, not out of the pockets of the gas company, but those of the consumer. He therefore laid it down as a first proposition that there should be an equalization of the gas-rates, and that there were no circumstances in this case which called for a reduction in the charge for the public lamps. The gas company, in supplying a private consumer, carried their service-pipe up to his house, and that pipe might supply 40 lights, whereas each public lamp required a separate service-pipe, with all the leakage incident to that service concentrated on a single light.

The UMPIRE: You are not going to contend for a larger sum?

Mr. MICHAEL: No.

The UMPIRE: Taking the 11,900 feet which we have agreed to as the consumption of each public lamp, how much does that amount to per annum at the same price the company supply to other customers?

Mr. SOUTHGATE: £2 13s. 7d.

Mr. PHILBRICK: No; £2 13s. 6½d.

The UMPIRE: That is much less than you have been charging.

Mr. SOUTHGATE: But we have been supplying 5-feet burners.

The UMPIRE: Then the difference is between 4 and 5 feet.

Mr. SOUTHGATE: To the £2 13s. 7d. is to be added 14s. 5d. for lighting and extinguishing.

Mr. MICHAEL: This is what we make it: we say 11,900 feet, at 4s. 6d. per 1000, would be £2 13s. 7d., to which should be added 14s. 5d. for lighting, extinguishing, and cleaning the lamps, making together £3 8s. each per annum, which we say is the sum that should be paid. I do not know whether my friend's clients depart from their offer of 3s. 9d.

The UMPIRE: They offered to pay 3s. 9d., and you are now going for 3s. 8d.

Mr. MICHAEL: No; we are going for 4s. 6d.

Mr. PHILBRICK: Our offer originally was to pay £3 5s. per lamp.

The UMPIRE: Which was 3s. 9d., including the lighting and cleaning.

Mr. PHILBRICK: No; for gas only. Our original offer was £3 5s., and they wanted £3 10s. We said, "We will put on 4-feet regulator burners."

Mr. MICHAEL: I do not know what their 3s. 9d. per 1000 works out. We claim £3 8s. per lamp; and now comes the important question—to prove to you, from our working, that 4s. 6d. is a reasonable price to charge for gas, which is really the question you have to decide, looking at the terms of the Act of Parliament, in order to provide our dividend of 10 per cent. and reserve-fund. We say that there should be no distinction between the public and the private consumers, the public consumer being only a private consumer on a large scale.

The UMPIRE: What dividends have you actually paid?

Mr. MICHAEL: I can tell you what they have paid every year since the passing of the Act. For the year ending June 24, 1864, they paid 7½ per cent., leaving an arrear of 2½ per cent.; for the year ending June 24, 1865, they paid the arrear of 2½ per cent. and 7½ per cent., leaving still an arrear of 2½ per cent.

The UMPIRE: That is to say, 10 per cent. was earned.

Mr. MICHAEL: Ten per cent. was earned. In the year ending June 24, 1866, they paid off the 2½ arrear and 6 per cent.—8½—leaving 4 per cent. in arrear; and in the year ending June 24, 1867, they paid off the arrear of 4 per cent. and 5 per cent., leaving 5 per cent. in arrear; so that there has been a continually increasing arrear, beginning at 2½ and ending at 5 per cent.

Mr. PHILBRICK: There has been an increasing profit every year, though.

The UMPIRE: Not last year.

Mr. MICHAEL: They made 9 per cent. last year. We have here a statement of the cost price of gas for the year ending June 24, 1867. If you will look at the top of it you will see the quantity of gas made as registered at the station-meter, then the quantity actually sold as taken from our books, and the difference between the two is the quantity either lost or used upon the works.

The following document was handed in:—

GRAVESEND AND MILTON GASLIGHT COMPANY.

Statement showing the Cost Price of Gas for the Year ending June 24, 1867.

Gas made during the year	45,545,000 cubic feet.
Gas sold do.	38,337,830 ,,
Unaccounted for or used on works . .	7,207,170 ,,

Cost.	Total Amount. £ s. d.		Per 1000 Feet of Gas Sold. £ s. d.
Manufacture—			
To Coals carbonized and consumed . . .	4140 14 10	....	0 2 1·92
Less coke and other products	1800 8 3	....	0 0 11·27
Net cost of coals . . .	2340 6 7	....	0 1 2·65
Purifying materials	114 16 6	....	0 0 0·71
Labour and supervision	1242 16 2	....	0 0 7·78
Wear and tear of works, tools, &c. . .	397 4 2	....	0 0 2·48
Distribution—			
Ordinary repairs and maintenance of mains, services, pipes, &c.	204 15 8	....	0 0 1·28
Management—			
Directors and auditors	163 16 0	....	0 0 1·02
Salaries	270 0 0	....	0 0 1·69
General Charges—			
Rents, rates, and taxes	524 1 5	....	0 0 3·28
Printing, stationery, petty cash, and incidental charges	57 11 3	....	0 0 0·36
Bad debts and contingencies, 2½ per cent. on receipts	247 4 6	....	0 0 1·54
			0 2 10·79
Reserved Fund—			
Annual contribution to reserved fund authorized by Act.	300 0 0	....	0 0 1·87
Dividend—			
Statutory dividend, £10 per cent. on capital	3000 0 0	....	0 1 6·78
			£0 4 7·44

The UMPIRE: Why should not the quantity of gas used at the works be estimated as well as the other?

Mr. MICHAEL: It is quite impossible for us to do it.

The UMPIRE: You mean by it the quantity of gas used at the burners on the premises. Why should not that be registered?

Mr. MICHAEL: Practically it never is; it is all put down as unaccounted-for gas. The way of arriving at it is this: The station-meter shows the total quantity of gas made, and our books the total quantity sold. In this case it shows a deficiency of 7,207,170 cubic feet, and I think that will be found the general average throughout the country. We have then divided the whole account under three heads—"Manufacture," "Distribution," and "Management." We added to that the items which come under the denomination of "General charges," and we have a heading for "Reserve-fund" and for "Dividend." The first item is the charge absolutely made

to us for the coals required to be carbonized to produce the 45½ million cubic feet of gas; and I should tell you here that we are obliged to use with our Newcastle coal a considerable quantity of cannel. [The learned counsel read through the various charges under the several heads of account.] The result of this account is that the cost of gas to us is 2s. 10·79d. per 1000 cubic feet, and we have to add to that the amount of the statutory profit and an annual contribution to the reserve-fund. We thus arrive at the sum at which gas can be sold to the consumers. We spread the creation of the reserve-fund over a period of ten years, which requires an annual contribution of £300, equal to 1·87d. per 1000 cubic feet of gas; and our dividend requiring £3000, is equal to 1s. 6·78d. per 1000. This works out, taking all these sums together, to 4s. 7·44d., or we may call it 4s. 7½d. The difference between 4s. 6d., the price actually charged, and this 4s. 7½d. accounts for the fact that we have not been able to pay our full rate of dividend.

The UMPIRE: It more than accounts for it. What I mean is this, that when you take in the reserve-fund and the dividend as though they were regular annual charges to be deducted from your profits on the sale of gas, and to be looked upon as a regular annual outgoing, you are really charging the gas—putting it at 4s. 7·44d.—at less than you would have to charge.

Mr. MICHAEL: No; 4s. 7·44d. is the amount paid by us.

The UMPIRE: In point of fact you charge 4s. 6d., but you really do not get quite so much.

Mr. MICHAEL: No, because of the charge made to the public lamps we do not get so much.

The UMPIRE: Is the difference due to the public lamps?

Mr. MICHAEL: A portion of it is due to the public lamps, and of course there are items which will vary from year to year, and thus make a difference in the account. Well now, sir, if this account be true we should be entitled to charge the public lamps at the rate of 4s. 7½d., if we were disposed to take advantage of our position; so that, in asking 4s. 6d., we are clearly within the terms of our Act, and unless some good reason can be shown why the public lights should be charged less than the private lights we claim to be paid this 4s. 6d. That is the proposition I have to maintain.

The UMPIRE: Perhaps I may say at once that it strikes me it never could be intended by the Legislature that any arbitrator or tribunal should sit in judgment upon such a question as this—how much cheaper ought the public lights to be charged than the private lamps. I should say off-hand I go with you to this extent, that when an arbitrator is called upon to say at what rate the public lamps are to be supplied he must take care that the public are not cheated; that is to say, that the public rights are not dealt with upon any unfavourable terms as compared with other customers; but it never was intended that he was to exercise so extraordinarily wide a discretion as to say how much cheaper the public lamps should be charged than the private consumers. We must proceed upon the basis that whatever the company are entitled to charge to one person they are entitled to charge to another.

Mr. PHILBRICK: I do not know that I should say anything against it except in this way, that the conditions should be equal; that is all I say at present. If the public is a better customer—and I totally take issue with my friend and those who come here to support his theory—if the public is a better customer, and can be supplied more economically, then I say the public is entitled to the benefit of that more economical supply by way of reduction. I do not say the public is entitled as a matter of favour.

The UMPIRE: If you could show, by way of illustration, that in order to earn 4s. 6d. per 1000 feet from Mr. Smith's shop they are obliged to do certain things, say, supply meters or things of that kind which add so much per cent. to the expenses, which the public lamps do not get the benefit of, then I shall agree with you.

Mr. PHILBRICK: That is what I say on the part of the public, which I represent here. Virtually I do not say the public lamps are entitled to any favour because they are public, but I say they are entitled to equal benefits with the private consumer.

The UMPIRE: That is, that no greater profit is to be made out of them. My remarks are rather anticipating that you were going to put it higher.

Mr. PHILBRICK: I shall have to call attention presently to what is the invariable practice throughout the country.

The UMPIRE: I do not know that we have anything to do with that.

After a short adjournment the following evidence was given on behalf of the gas companies.

Francis Southgate, Esq., examined by Mr. MICHAEL.

I am secretary and solicitor of the Gravesend Gas Company. I have before me a statement showing the cost price of gas for the year ending the 24th of June, 1867, a lithographed copy of which has been put in. I made this statement myself from the company's books, with the exception of a portion in which the book, being a continuation of that book, is lost by being taken away. It is merely the carbonizing return of the coals. That I have made up from the monthly returns made by the superintendent of the company to the directors showing the progress of the works. With the aid of the books and those monthly statements I have ascertained the quantity of gas made in the year. It amounted to 45,545,000 cubic feet. The amount sold to our various customers was 38,337,830, leaving 7,207,170 as the quantity of unaccounted-for gas. I have worked that out, and find it amounts to 16 per cent. as nearly as possible. The sum paid for coals carbonized during the year I have also ascertained from the books of the company.

The UMPIRE: I would suggest that you should ask the question—Is this statement correct? We may as well have it in one question as many.

Mr. MICHAEL: Have you verified this statement of the cost of manufacture down to the 2s. 10·79d., and is it a statement of the money absolutely paid by the company during the past year?

Witness: It is.

Mr. MICHAEL: There is one matter which is an estimate I believe—"Bad debts and contingencies." You have put that down at 2½ per cent. upon the receipts?

Witness: Yes.

Mr. MICHAEL: That I believe you have calculated, and it is not an actual figure?

Witness: It is not an absolute figure, but I have found out that it is a little more since I made my estimate.

The UMPIRE: How much do you say it ought to be more?

Witness: I was not aware there were some bad debts since the 24th of June. Taking the corresponding half year, I find there were £163 10s. which ought to be charged to this year, and £112 of actual bad debts this year. That would make £275.

The UMPIRE: That is in a particular year. Have you gone back any number of years?

Witness: No, I have not, but I can state what the bad debts were in former years.

Examination continued: I have worked out in decimals the annual contribution to the reserve-fund, and I find it comes to 1·87d. per 1000 cubic feet of gas. The bad debts come to 1·54d., and the amount required to pay the statutory dividend is 1s. 6·78d. The result of the whole is that the total cost of gas is 4s. 7·44d. Since the passing of the Act the company have not paid the full rate of dividend to which they are entitled, nor have they placed anything to a reserve-fund. There was once a sum of £500 invested, but that could hardly be considered to represent the reserve-fund, inasmuch as it was to meet the claim of a gentleman in India, who is a shareholder, and has not given authority to any one in this country to receive his dividends, which amount to nearly that sum. It is merely a matter of private book-keeping. In 1864 the dividend paid was 7½ per cent. In that year we lodged our accounts with the clerk of peace, as required by the Gas Clauses Act. The next year we paid the arrear of 2½ per cent. and a dividend of 7½ per cent., our earnings having amounted to 10 per cent. That still left an arrear of 2½ per cent. We deposited the accounts for that year with the clerk of the peace. The next year we paid that arrear of 2½ per cent. and 6 per cent. dividend—equal to 8½ per cent.—leaving a deficiency of 4 per cent. We deposited the abstract of that year's accounts with the clerk of the peace, as required by the Act. Last year we paid the arrear of 4 per cent. and a dividend of 5 per cent., so that there is now an arrear of 5 per cent. We paid absolutely 9 per cent. out of the profits of the year. We had no balance at the bank; I think one year we overdrew our account at the bankers to pay the dividend. We have every year deposited our accounts with the clerk of the peace; it is not the time to do it yet, for the current year. In purchasing coals and other materials for the carrying on our works, we go to the best markets; the directors take a great deal of trouble to do so. We pay 7s. 6d. per ton for coal at the pit's mouth, and we freight vessels at 7s. 3d. per ton, which makes the cost of coals 14s. 9d. per ton, and we pay 6d. for canal dues, bringing the amount up to 15s. 3d. per ton.

The UMPIRE: This strikes me as immaterial to go into. It may be important ultimately—I do not know that it may not; but I should think that any lawyer, looking at his own duty in a question of this sort, would begin by assuming that people carrying on business did not do it recklessly and foolishly, but in such a way as to make the best profits they could, and it must be a strongly affirmative case which any one saying they did not would have to make out. I do not know whether this is a portion of Mr. Philbrick's case.

Mr. PHILBRICK: Oh no, sir.

The UMPIRE: Then, to go into these matters, in the first place, is to take up time unnecessarily. I should tell both the arbitrators, and I should think myself, if I had to decide the point, that *primâ facie*, and unless the evidence was strongly impeached, it is fair to suppose that people carrying on a business like this would do their duty as honourable men.

Mr. PHILBRICK: I am not going to suppose for one moment that the directors of the gas company would wilfully and fraudulently spend more than they ought, or keep bad books.

The UMPIRE: The question is that of price as between the public and private lights.

Mr. PHILBRICK: It is a question of law entirely, and has nothing to do with these things. I say the statutory capital of the company is all moonshine; it is not all paid-up capital. The capital of the company is £10,000.

Mr. MICHAEL: I say my friend is concluded on that point. Here is the Act of Parliament, passed after due deliberation, which says that the capital of the company is £30,000.

The UMPIRE: I want to see at present whether we can usefully get more out of Mr. Southgate.

Mr. MICHAEL: It is important, if you rule that it is necessary for me to go into the antecedents of the company, to show how the £30,000 is made up, and I must examine the witness upon it.

The UMPIRE: At present I am assuming, until something is proved to the contrary, that the sum to be kept in hand is £3000, to pay 10 per cent. upon the capital, and it is for Mr. Philbrick to develope his theory. But that will not depend upon Mr. Southgate's evidence.

Mr. MICHAEL: But if we are to go into this question, I must bring evidence to show that £30,000 is the capital of the company; and therefore it is as well to raise the question at once whether you are not precluded by the Act of Parliament, which says the capital of the company is £30,000, and that upon this they shall have 10 per cent., and that upon any further sum they may raise they shall have 7½ per cent.

Mr. PHILBRICK: If it says that, I am agreed that I have no right to go further.

Mr. MICHAEL: I depend upon the preamble of the Act of 1863, which says, "Whereas the capital of the company is £30,000, divided into 1500 shares of £20 each." The 17th section says, "The capital of the company shall be the existing share capital of £30,000, subject to augmentation as hereinafter mentioned;" and the 23rd section says, "The profits of the undertaking to be divided in any year amongst the holders of shares to be created under the authority of this Act shall not exceed the rate of £7 10s. per cent. in the year on the capital for the time being paid up in respect of such shares."

The UMPIRE: That we have nothing to do with.

Mr. PHILBRICK: I beg your pardon, "On the capital for the time being paid up."

The UMPIRE: That means on the new shares. I want to know what it says respecting the old shares.

Mr. PHILBRICK: We must go to the Gas-Works Clauses Act, section 30, for that.

The UMPIRE: You see you give me all these sections, but you do not give me the slightest notion why you cite them all. "The profits of the undertaking to be divided amongst the undertakers in any year shall not exceed the prescribed rate, or where no rate is prescribed they shall not exceed the rate of £10 in the £100 by the year on the paid-up capital in the undertaking."

Mr. PHILBRICK: Then if you go to the 31st section, you will find there is a power to raise a reserve-fund, where no sum is prescribed in the special Act, of one-tenth of the nominal capital, drawing a distinction between paid-up and nominal capital.

The UMPIRE: The nominal capital here is £30,000.

Mr. PHILBRICK: I say so; the nominal capital is £30,000 and the paid-up capital £10,000.

Mr. MICHAEL: I do not admit that, the Act of Parliament passed after due deliberation, says it is £30,000.

Mr. PHILBRICK: If my friend will show me that, I will give it up.

Mr. MICHAEL: "Whereas the capital of the company is £30,000."

The UMPIRE: Not the paid-up capital.

Mr. MICHAEL: The capital upon which 10 per cent. is to be paid.

The UMPIRE: "The capital of the company is the present share capital of £30,000;" and then another Act says the dividend upon the capital is to be 10 per cent. It does not say the paid-up capital of the undertaking.

Mr. MICHAEL: The distinction to be drawn is, that whereas the capital of the company might be £50,000, and the directors might only have called up 10 per cent. of that capital, they are not to be paid 10 per cent. upon the £50,000, but only upon the £5000 which has been called up.

Mr. PHILBRICK: At that rate it would be the nominal capital which would regulate the price of gas.

The UMPIRE: What you say here is, that the profits of the undertakers ought not to exceed 10 per cent. upon £10,000.

Mr. PHILBRICK: Whatever the amount may be. I said £10,000; it may turn out differently.

The UMPIRE: But supposing the profits do exceed that, you do not deny that the reserve-fund may be equal to one-tenth of the nominal capital.

Mr. PHILBRICK: Quite so. I say my friend is quite right as to the reserve-fund; but there is this clear distinction between nominal and paid-up capital. My friend is entitled to put at the bottom of his account 10 per cent. upon the paid capital, and he is entitled to make up that for deficiencies in back years.

The UMPIRE: Then, do I take it that before you go to your balance-sheet at all you have actually paid more than 10 per cent.?

Mr. MICHAEL: That is my friend's contention.

Mr. PHILBRICK: If you take it on the paid-up capital.

Mr. MICHAEL: I will show that the words "nominal" and "paid-up" capital, in this case, are the same thing. Supposing a gas company had a capital of £100,000, you call that the nominal capital; but supposing they had only paid up £10,000, is it to be argued, according to my friend, that the company having only called up £10,000 are entitled to a reserve-fund of £10,000, because that is what his argument amounts to?

The UMPIRE: So Mr. Philbrick shows.

Mr. MICHAEL: That is a *reductio ad absurdum* at once. The Gas-Works Clauses Act was passed in 1847, and the Gravesend Gas Act was passed 16 years afterwards, and it is in accordance with the universal practice in all cases throughout the country, when an Act of Parliament declares what the capital shall be, that is the capital upon which the dividend is to accrue. What is the object of going to Parliament, and of going before Lord Redesdale, who estimates what the value of the company is at the time? If we attempted to get a capital of £30,000 as against the interests of the public, he is there to look after and protect those interests. We might want only a capital of £30,000, and yet ask for £100,000, upon which 10 per cent. would be an absurdity. There is always a searching examination before Parliament to see that the capital has been expended. After due consideration Parliament said the capital of this company was £30,000, and I hold that is to be considered the paid-up capital upon which they are entitled to 10 per cent.

The UMPIRE: It is certainly an unfortunate use of language.

Mr. MICHAEL: There may be difficulties, but if you rule to the contrary——

The UMPIRE: I have been under the impression that Lord Redesdale knew the difference between paid-up and nominal capital.

Mr. PHILBRICK: My friend must not take it to be in the Acts of Parliament. They are both to be read together.

Mr. MICHAEL: I want to know, sir, what you rule.

The UMPIRE: I will not rule anything now. It is one of the questions which I shall reserve to the last. You have fair warning that it is one of the points to be raised.

Mr. PHILBRICK: I shall go into the matter most fully.

Mr. MICHAEL: I shall object to it.

The UMPIRE: I shall admit it, subject to your objection.

Cross-examined by Mr. PHILBRICK: The account you now produce was sent by me to Mr. Vallance. In the account handed in by me I bring out the price at which the gas should be sold at 4s. 7·44d.; in the other account it is 4s. 6·48d.—a difference of 1d. per 1000 feet. The estimate upon which this was based was afterwards discovered to be erroneous, Mr. Wadeson not having made allowance for 17 lamps. He had taken the whole as 5-feet burners, and he had also not allowed for some 14 gas-lamps which we supply by contract to a private consumer. The lithographed account is the correct one. I have been clerk to the company for 20 years. I was the solicitor of the company at the time the Act was passed, but I had very little to do with it.

Mr. PHILBRICK: The recital in the preamble is that the capital of the company is £30,000. How much of that is really paid up?

Mr. MICHAEL: That is a question I object to.

The UMPIRE: I admit it, subject to your objection. I quite understand the nature of your objection; you say that, looking at the whole of the Act, the words taken together amount to nothing if they amount to anything inconsistent with £30,000.

Mr. MICHAEL: I say the meaning of these words is the same as "paid-up capital" in the Gas-Works Clauses Act, and that you are precluded from going into the question, the words being "the capital of the company is £30,000."

The UMPIRE: And that the "paid-up capital" must mean the same thing. That you say was decided after a very careful consideration of the whole case, and that, therefore, I must take note of it.

Cross-examination continued: I have no accounts here which show what the capital of the company is. There is a share register in existence; but I am not aware of any book which shows what the capital is. I cannot say how much the capital of the company was when I first became clerk to the company. I believe that about that time the company was enlarged, and new shares were issued. I think the capital was then £20,000. That was in 1847. I cannot tell how much of that £20,000 was subscribed. I have not the books relating to that period here. The only books I have are those which relate to the company since the passing of the Act.

Mr. PHILBRICK: Did the enlargement of the company take place in this way—that the sum of £5000 having been subscribed, another sum of £5000 was paid up, and a further sum of £10,000 was nominally added by allotting shares to that amount among the shareholders?

Witness: I cannot tell what was the amount paid, but the shareholders had for many years only received a small dividend, the rest of the profits having been carried to capital. As the old works became too small, it was necessary to rebuild them, and the old works and mains were valued by the original contractor of the works, he having been called in to value as between the old and new proprietary. Fresh shares were then issued to the public, but what amount was subscribed I cannot speak to from my own knowledge. That is the mode in which it was done—the new company taking the works at the price at which they were valued. The balance of cash, and every thing in hand, with the amount subscribed, was applied to the formation of the new works down by the canal.

Mr. PHILBRICK: You have told us that £20,000 was the nominal capital; was £10,000 the amount of the money subscribed, and the value of the works?

Witness: I do not know; I know so little of the original establishment of the company. You asked me just now whether the original capital was £4000; my impression is that it was.

The UMPIRE: There was no previous Act of Parliament.

Witness: It was a joint-stock company under a Deed of Settlement.

By Mr. PHILBRICK: My father and I are joint secretaries. I think there are no books in existence as far back as 1824. The whole £20 has been called up on each share. The amount allotted as capital without payment is £10,000.

The UMPIRE: Do you say without consideration?

Witness: The amount of dividend received amounted to only so much per cent., and just before the Act of Parliament was applied for the value of the works was taken into consideration, and the dividends unreceived by the proprietors were capitalized. It is not paid up capital in the strict sense of the word in which Mr. Philbrick uses it; it is capitalized profits.

Mr. PHILBRICK: Whatever you call it, was there just before the passing of the Act of Parliament a nominal increase in the capital of £10,000 without a single subscriber paying down a sovereign?

Witness: Yes; there was an actual increase in the capital of the company arising from capitalized profits.

Mr. PHILBRICK: Was that arrived at by a revaluation of the stock in trade and premises of the company?

Witness: It was.

Mr. PHILBRICK: Also by considering what dividends you ought to have paid in past years?

Witness: I believed the value of the stock and plant was increased nearly £10,000 in the books of the company at the time it was done.

Mr. PHILBRICK: You believe that £10,000 or £15,000 has been subscribed, and the rest is capitalized profits?

Witness: Yes.

Mr. PHILBRICK: Are there any books upon the face of the earth which will show whether you are correct in that belief or not?

Witness: There are the old books of the company; they will show what was received and paid, but I have not referred to them.

Mr. PHILBRICK: You had notice to produce them.

Witness: I might have notice to produce the Crown jewels. I do not think I shall produce them. I did not bring them to-day; I was told they were not relevant to the inquiry. I do not know where they are; I have not seen them, and therefore it is impossible for me to say.

Mr. PHILBRICK: I hope they will be produced the next time we meet.

The UMPIRE: I think Mr. Philbrick is pursuing an inquiry which he has a right to pursue.

Witness: It is simply going into accounts for 43 years back.

The UMPIRE: My opinion may be that it has nothing to do with the inquiry before us, but I think Mr. Philbrick has a right to ask whether the capital is paid up in a sense different to what you state. Mr. Philbrick's suggestion is, that when the Act of Parliament was passed there was only a sum of £10,000 paid upon the shares, and that the other sum of £20,000, which was added, was the valuation of the property in the possession of the company. Was that it?

Witness: No.

The UMPIRE: What is it?

Witness: It is this: the company was first established in the year 1825, with a capital of either £4000 or £5000—I am not prepared to say which. Instead of raising further capital as the town increased, the shareholders applied their surplus income, after receiving a small dividend, in the extension of the mains in the town. After a considerable number of years, the town became so large that the works were too small, and it was necessary to enlarge them. They could not extend the works at the other end of the town, as Lord Darnley would not grant them a lease. I think that was in 1847. The works were then revalued, and I think the amount put upon them was £14,000 or £15,000. Some new capital was raised, and that brought it up to £20,000. This went on till about 1860, when the capital account of the company (the shareholders having only divided a certain sum) was investigated, and it was found that there had been a large increase in the capital account, and the profits, which had been divisible among the shareholders, instead of being paid in cash to them, were capitalized—that made up the £30,000. The reason we applied to Parliament was, that for two years we were threatened with an opposition by the County and General Gas Company.

Mr. PHILBRICK: The only point I want to ascertain, when I ask for the production of the books, is this—but if Mr. Southgate can tell us now, or at any time during the inquiry, that will do—what the actual amount of money paid by the shareholders was.

Witness: I can do so if it is considered right.

The UMPIRE: I think you ought to do it.

Cross-examination continued: I produce all the books showing how all the items in the lithographed statement of cost of gas are made up. I cannot tell what the proportion of waste or leakage has been in previous years. I am told it is about the average of other companies. The item, cost of coal carbonized and consumed represents 4841 tons of common coal at 16s. 2d., and 100 tons of cannel coal at 28s. 6d., making a total of £4055 12s. 10d. Then there is £81 2s. the value of coals consumed in working the engine and at the superintendent's house, making altogether £4140 14s. 10d. The 15s. 6d. in the monthly accounts handed in, does not include the cartage of the coal into the works. The 16s. 2d. per ton is made up of 7s. 6d. cost of coal, 7s. 3d. for freight, 6d. for canal dues, and 11d. for cartage. The £1800 given credit for on account of residuals, is made up of £1323 10s. 10d. received for coke; £40 11s. 1d. for breeze; £249 for tar; £29 9s. for ammoniacal liquor; and £34 19s. for sundries. Then there were debts owing for residual products and stock in hand, making up the amount to £2386 5s. 9d., from which is deducted the stock in hand, £585 7s. 6d., leaving the total of the year £1800 18s. 3d. The price of coke varies a great deal. I have no knowledge of the proportion of residuals to the cost of coal per ton. We get 10s. a chaldron for coke when sold retail, and 8s. wholesale. I cannot say the proportion of each. The commissioners pay very nearly one-eighth of the rental of the company, or about £1000. There are 300 public lamps at £3 5s. each, including the charge for lighting. The 14s. 6d. which they pay for lighting is for money actually paid out of profit upon which there is no profit. The commissioners are customers for gas to the extent of only about £750. We would rather supply the gas to them without the lighting, if we could only keep the lamplighters honest. The property of the lamps is in the commissioners. We have never tried to let the lighting by tender. We employ a certain number of labourers and pay them wages. The amount paid to them is £187 4s. for that service alone.

Re-examined by Mr. MICHAEL: If the men do any other work, the amount paid for that would be put down in the ordinary charge for wages.

Thomas G. Barlow, Esq., examined by Mr. MICHAEL.

I have gone through the accounts of the company, and I visited the works some little time ago. The leakage here is about the usual amount.

I have with me the accounts of the metropolitan companies, and I find the average is there 16 per cent. I have gone into the question of the cost of coals at Gravesend. I do not think the company could buy them cheaper or better than they do.

The UMPIRE: I would suggest that this is all matter anticipating the cross-examination. (To witness:) Have you attended to the figures given by Mr. Southgate to-day?

Witness: I have.

The UMPIRE: Have you seen the mode in which the works are carried on?

Witness: I have.

The UMPIRE: Now, according to your experience, are you able to say whether they are economically conducted?

Witness: They are economically conducted.

The UMPIRE: According to the figures given here to-day, have you any reason to believe there is any recklessness or extravagance in the manufacture of gas?

Witness: I am quite satisfied that the works are conducted as economically as such works can be.

By Mr. MICHAEL: The quantity of coal consumed was 4941 tons. The cost of gas-works, on the average of the whole of the metropolitan companies, is £6 10s. 5d. per ton of coals carbonized, which, upon the number of tons used here, would give a capital of about £30,000. I think the capital is a very moderate capital, taking it per head of population. The population is a little under 20,000, which gives 30s. per head. In London the capital is £2 per head.

Cross-examined by Mr. PHILBRICK: In some parts of the metropolis the leakage is very large. In some districts it is as high as 23 per cent.; in others it is not more than 9 per cent.—the mean is about 16. That is not higher than the mean of the country at large; 16¾ per cent. is the general allowance throughout the kingdom for waste gas used on the works and gas unaccounted for—in fact, for everything that does not pass through the consumers meters. In speaking of the price of coal in the metropolis, I include the coal dues and all other charges. Gravesend is outside the area of the coal dues, but the works of the company are peculiarly situated, inasmuch as only vessels of a certain size can enter the canal, which involves higher freights. You can get vessels to London for 5s. per ton, but here, if they have to get into the canal, the freight would be 7s. or 7s. 6d., which more than compensates for the coal dues. The works are well situated for the supply of gas to the town. If the company can sell 8000 cubic feet of gas per ton of coal consumed, they do pretty well. The proportion of residual products per ton of coal carbonized varies, and every town must stand upon its own footing in this respect. In London the products vary from 9s. to 6s. 6d. I have tested all the figures in the statement put in. The first figure is taken from the station-meter at the works.

Mr. PHILBRICK: We have Mr. Southgate's statement that 4841 tons of coal and 100 tons of cannel were consumed, making a total of 4941 tons. According to your average there ought to be 1½ million feet more of gas sold. It would be 39,528,000 as against 38,337,000.

Witness: It is so.

Mr. PHILBRICK: Is there anything you observed in your survey of the works, or anything that your experience can suggest, to account for this discrepancy?

Witness: Yes; they do not sell quite 8000 feet per ton. The fact is, many of the mains have been down 40 years, and the leakage would be increased from that cause.

Mr. PHILBRICK: Then either the leakage must be excessive or your estimate of 8000 feet must be wrong.

Witness: We generally allow that if the leakage is under 16⅔ per cent. there is not much to complain of in works of this age. There is very little difference here.

Mr. PHILBRICK: It amounts to £238.

Witness: That is on the price of 4s. 6d., but you ought not to take it upon that; you can only take it upon the 2s. 10d., or even not at that; you must take it upon the cost of coal which is 1s. 2½d.

Mr. PHILBRICK: If they did as they ought to do they would have so much more to sell.

Witness: If they were to take up some of their old mains they would have more gas to sell, but then there would be the cost of carrying that into effect, and the question is whether it is not better to go on as they are instead of spending fresh capital in relaying mains. There is no doubt if their mains were put into a proper state they would have 1½ million feet more gas to sell.

The UMPIRE: How much do they in fact sell?

Mr. SOUTHGATE: 7660 feet per ton.

Cross-examination continued: I think five men to light the number of lamps in Gravesend is a very fair number; it gives about 60 lamps to each man. I have had considerable experience as to the charge for lighting cleaning and extinguishing lamps. My usual allowance is 14s. 6d. each per annum in small provincial towns. In London I should put it at 16s. I cannot recollect whether at Worksop I fixed it at 13s. That case was some years ago, but my impression is that the lighting there was only for eight months in the year. Since then, too, wages have risen 30 per cent. The great source of leakage is in the service-pipes, and in the case of the public lamps you have a separate service for every consumer of 12,000 feet a year; whereas the average consumption of every private consumer must be taken at 20,000 cubic feet, unless Gravesend differs very much from other towns. On the other side, of course, there is the guarantee against making bad debts, and the greater facility of collection. If the company had not the public lamps to supply they would be able considerably to economize their leakage by reducing the pressure on the pipes after ten o'clock at night to a greater extent than they now do.

The UMPIRE: Do you think the leakage is enough to counterbalance the advantage which the company get?

Witness: It does not quite counterbalance it. The advantage which the company get from the public lamps is that they sell an additional quantity of gas, and if they got their full profit upon that they would be benefited to that extent, but the extra profit does not more than compensate for the leakage caused from keeping their mains charged all night.

Mr. PHILBRICK: Can you explain how it is that in almost every town in England, and in nearly every town abroad, where gas companies supply the public lamps, there is a difference of at least 25 per cent. made in favour of the public consumer?

Witness: It is not so.

Mr. PHILBRICK: Is it so in London?

Witness: Not by Statute.

Mr. PHILBRICK: Is it so in fact?

Witness: There are instance in which the public lamps are supplied at a less rate than the private consumer, but it is a practice which has been condemned over and over again by parliamentary committees.

Mr. PHILBRICK: Am I not right in saying, as a rule, that it is the practice in London?

Witness: There are such instances; but I should think the instances in favour of a uniform price are more numerous. Under the Metropolis Gas Act, 1860, the companies are bound to supply the public lamps at the lowest price charged to any private consumer.

Mr. PHILBRICK: Assuming the fact that 75 per cent. of the price charged to the private consumer is charged for the public lamps, how would you account for it?

Witness: One mode of accounting for it is that the companies chose to purchase peace and quietness by making the reduction. The public authorities are continually carping and claiming reductions of price for the benefit of the ratepayers, and, for the sake of peace and quietness, some of the gas companies may have been weak enough to give way.

By Mr. PHILBRICK: I know several Acts of Parliament in which a sum has been fixed below the price charged to private consumers—Coventry, for instance; but I know a great many more where the price fixed is the same. In the largest towns that question has been raised—in Birmingham, Nottingham, &c.—and finally settled in favour of a uniform price. At Reading, I think, the public lamps are charged at a higher rate. There must be many instances, in small towns, where the public lamps are charged at a higher rate than 4s. per 1000 feet.

Re-examined by Mr. MICHAEL: I think it is an injustice to the private consumers to supply the public lamps at a lower rate than they are charged. The only way to diminish the leakage in this town would be to take up the old mains and put down new. That would involve the expenditure of new capital, which would have to be raised: and not only so, but a large expenditure to be taken out of the receipts to represent the cost of the original mains replaced. I have examined the accounts of the company, and, so far as I know, there is nothing charged to revenue that ought to go to capital.

Alfred Penny, Esq., examined by Mr. MICHAEL.

I am a civil engineer, carrying on business at Wenlock Iron Works, London, and have had large experience in matters pertaining to gas-works. I have examined these accounts, and believe that the works are economically carried on. I consider that 4s. 6d. per 1000 is a fair price for gas in such a town as Gravesend. I agree generally in the calculation of the quantity of gas produced per ton of coal. Leakage is subject to disturbance from local causes, by which, in some places, it is more than in others. I have carried on works in towns where the leakage has been as high as 22 per cent. I see nothing to complain of in the leakage at Gravesend. I think the £1800 for residual products is a fair proportion on the quantity of coals carbonized. The proportion varies everywhere; there is no rule on the subject.

The UMPIRE: Assuming that we have got the figures correctly, it does seem an uncommonly strong proposition for Mr. Philbrick to embark upon an inquiry based on the supposition that the company do not get all they can for their products.

Mr. PHILBRICK: Until I saw this analysis I had only the accounts which were filed, in which they put down not the cost of production, but the total amount expended during the year for coal, and comparing that with the quantity they gave credit for, it did appear so.

Cross-examined by Mr. PHILBRICK: I think the tendency of recent legislation has been towards equalizing the price charged to public bodies and to private consumers. I know that recent contracts have had the same tendency. Taking all the advantages and disadvantages into consideration, the cost of supply is the same in both cases. At Uxbridge, the price to the municipal body is 5s. per 1000, they paying for lighting and extinguishing, and the same price is charged to the private consumers. That state of things has existed since the commencement of the present year. Previous to that the public were supplied at 2s. 8d. per 1000 feet. There were two companies then, but neither was paying any dividend, but sustaining a positive loss. There are about 200 public lamps there. I believe the price charged for the public lamps, including lighting, extinguishing, cleaning, and repairing, before the company were incorporated, varied from 35s. to 63s., now they charge at the rate of 5s. per 1000 feet to both public and private consumers. The public authorities have any burner they like. We have agreed to average meter indication so long as we find it acts fairly, because we were desirous to do everything we could for their accommodation. I think the company's charge at Gravesend, 14s. 5d., for lighting, extinguishing, cleaning, and repairing the public lamps is reasonable, and that the number of men they employ for the purpose is the proper allowance. There is no economy in employing too small a number, because in that case the company have to commence lighting earlier. I never knew of a case in which the lighting was let by tender; it is invariably done by the gas companies.

Mr. *Jas. B. Cooper*, examined by Mr. MICHAEL.

I am clerk to the gas company, and have been so during the last five years. I keep the books and pay the lamplighters. The sum paid to them last year was £187 4s. That does not include anything else done by them for the company. The number of private consumers is about 1300.

Cross-examined by Mr. PHILBRICK: The Improvement Commissioners are the largest consumers, and the Milton Barracks the next. They pay £300 a year. The railway company and Rosherville Gardens are also large consumers, the proprietor of the latter paying £90 a year. There are no manufactories here; there are music halls and a theatre. We allow no discount to our large consumers. I have been asked for discount in a joke. The five men are constantly employed in lighting and extinguishing the lamps. One of them assists the fitter. Four are paid 11s. a week, and one 10s. a week. The lamp-cleaner has 18s. a week.

Mr. MICHAEL: Subject to providing you with the particulars of the constitution of the company, that is my case.

Mr. PHILBRICK: I may as well tell you, sir, what our position is. I believe when the company started they had a capital of £4000 money subscribed. They afterwards raised that capital to £5000 in the same way, and they then increased their capital £10,000 by allotting among the shareholders for every £1 they had in stock in the company £2, thus making the nominal capital £15,000. This was increased to £20,000 by fresh capital subscribed. Then, as Mr. Southgate tells us, in his time £10,000 was added before the company obtained their Act of Parliament, making the nominal capital £30,000, only £10,000 of that being money actually subscribed.

Mr. MICHAEL: Assuming those figures to be correct——

The UMPIRE: You do not mean to assume it.

Mr. MICHAEL: No; but supposing it to be correct, my observation would be two-fold—first, that Parliament having settled the capital at £30,000, it is not a part of this case to call it in question; and, secondly, supposing you are against me on that point, then I say that what my friend calls paper money is as truly capital as though the money were actually paid down, because it represents money out of the shareholders pockets, though not in the shape of actual calls upon their shares. If a company formed with a small capital for a town like this is content to let a portion of its profits go into the concern instead of into the pockets of its shareholders, it is, *ex nomine*, really as much capital as though it were money absolutely raised by subscription,

The UMPIRE: You might call in aid one of the clauses of their Act, which empowers them to raise additional capital. What does that mean but capital in addition to the £30,000?

Mr. MICHAEL: I say the recital of the Act is binding upon us, that we must take the existing capital at £30,000; and then I say that, supposing my friend's figures to be correct, the money has been so much paid up by the shareholders, instead of taking the whole of the profits as they accrued from time to time, having been content to leave them in the concern.

Mr. PHILBRICK: If Mr. Southgate will furnish us with the information, it may be that I shall be perfectly satisfied.

The UMPIRE: It ought to be done clearly and distinctly. It would be premature to discuss the matter till we have all the facts before us. It may turn out to be all paid-up capital, as far as we know at present.

THIRD DAY—THURSDAY, DEC. 5.

The inquiry was resumed this day, at the Westminster Palace Hotel.

The UMPIRE inquired if Mr. Philbrick intended to call witnesses on behalf of the commissioners.

Mr. PHILBRICK said he was not just then in a position to do so. He understood that his friend, Mr. Michael, had not actually completed his case. It was understood that Mr. Southgate was to come prepared to speak to two points, namely the amount of the company's capital and——

The UMPIRE: As to what was their real capital?

Mr. PHILBRICK: Yes, and as to the number of private consumers.

Mr. MICHAEL must certainly object to give evidence on the point of capital, but if he was called upon to do so, he would waive his objection and produce evidence accordingly.

The UMPIRE said the most convenient course would be to leave all the points of law to be discussed by himself and the arbitrators after the evidence had been heard, and in the meantime to obtain what figures they could in case the question of capital arose, and on which they would have to decide.

Mr. MICHAEL apprehended that he ought not to be called upon to give such evidence.

The UMPIRE said he understood it was to form part of the company's case. They were the only persons who could give the information.

Mr. MICHAEL: Under the circumstances, then, we are quite prepared to give it.

Mr. PHILBRICK would be willing to leave it till the cross-examination of Mr Southgate was proceeded with.

The UMPIRE said the most logical course would be for Mr. Michael to make the best case he could, and to recall Mr. Southgate for the purpose of obtaining the figures which he and the arbitrators would require.

Mr. PHILBRICK said that as Mr. Southgate could not give them the figures at their last sitting, he believed it was arranged that he should state them during his cross-examination. If Mr. Southgate would make out a statement he was quite prepared to take it.

The UMPIRE: The other point was, the number of private consumers.

Mr. MICHAEL: We have no memorandum of that, and do not find it on the shorthand-writer's notes.

The UMPIRE referred to his notes, and found the number of private consumers to be 1300.

Mr. MICHAEL: We can put in a clerk to furnish that information, if requisite.

Mr. PHILBRICK said the figures came out in the cross-examination either of Mr. Barlow or the clerk of the company, who had stated that the number of private consumers was 1300, and that the population was upwards of 30,000.

The UMPIRE said that he had formed a strong opinion on the case, but would prefer having the figures in respect to the two points that had been called for.

Mr. *Southgate* recalled, and cross-examined by Mr. PHILBRICK.

The Gravesend Gas Company was established in 1824, the capital being then £4000, in £20 shares, all of which was paid. In the following year—1825—an additional £1000 was subscribed for and paid, making £5000. About 1842, in consequence of Lord Darnley's refusal to grant a lease of further land, it became necessary to erect new works on another site. The company consulted Mr. Hedley, the engineer who acted for them in the construction of the original works, and he made a valuation of the works and business, including all the assets of the company, at £16,607 3s. 5d. It was then arranged that a new company should be formed, and that they should take the old works at £15,000. The new shares were all offered to the consumers. The £15,000 was for the works and assets, and everything as its stood. The actual amount of cash, debts, stock, and every other asset, ultra the works, was £5101 15s. 11d. Out of this sum there was £3768 6s. 2d. cash in hand. Their assets were in the shape of stock, rents, &c. The £15,000 included all these.

By Mr. PHILBRICK: It included all belonging to the works and the £5000 capital of the company, which was originally £4000, but had been raised by an additional sum of £1000. The new company subscribed £5000 in cash, and the old works being valued at £15,000, made the capital, in 1842, £20,000. Every old shareholder had his aliquot portion of the £15,000, and there was a new Deed of Settlement constructed, and new certificates of shares—in fact, a new constitution of the company altogether. The company then went on till 1848, when another new Deed of Settlement was constructed, in compliance with the provisions of the Joint-Stock Companies Act, 7 and 8 Vic., c. 345, the capital being £20,000. The old certificates were called in and new ones given, according to the form prescribed by the Act, showing what was paid up on each share. Matters thus went on till 1861. At the annual meeting in that year the capital account was stated to be £37,959 13s., which was accumulated in this way: Every year additions were made to the capital account of the sums expended, in addition to the extension of the works. In 1843 the capital was £20,000, the additions making it up to £37,955. Of that £37,955 the sum of £8161 8s. 8d. represented the debts due to the company for lighting, cash in hand, stock, &c. Of this sum there was £2500 cash in hand; £1000 in the London and County Bank; stock of the value of £1374 10s. 6d.; pipes, &c.; balance in the hands of the treasurer, £1084; and due to the company for lighting to the end of their financial year, £2264; and a small quantity of residual products, £85 5s. 11d. These items made up the £8161 Then there was the £7669 15s. 11d. which had been expended out of the profits between 1842 and 1861, in additions to and extensions of the works. These two sums, with the £20,000, made £35,831.

Mr. MICHAEL: A subsequent addition made up the amount to £37,959.

Witness: The shareholders then agreed to accept £10,000 instead of the £15,831, so as to make the capital £30,000. At that time there was a project before Parliament for another company. The notices were not given till November, 1862, and this was done in June, 1861. So far from having any intention to apply for an Act of Parliament, the company, not knowing that the proposed company intended to do so until their notices actually appeared, could not give the required notices, and were obliged to appeal to the Standing Orders Committee to dispense with the usual number of notices.

Mr. PHILBRICK: What dividend was paid in 1861-62?

Witness: Six per cent. From 1843 to 1856, 5 per cent.; and from 1856 to the creation of new capital in 1861, it was 6 per cent. The additions to the works between 1842 and 1861 were carried out without any permanent loans. The company had expended between £7000 and £8000 in additions to their works, and had saved £8000 besides, but he could not say that this had all been done out of the profits without borrowing. When they made the extensions they were obliged to sell out some of their funded stock, and they might have borrowed £1000 or so from one of their directors. The loans were only temporary, and were afterwards paid off. The net result was that, during the period mentioned, the company had made profits to the extent of £15,831, which had been divided amongst the shareholders, but which had been expended in the extension of the works, and in the creation of the fund of £8161, being the cash in hand.

The UMPIRE: The profits you had laid by were capitalized at £15,000.

Mr. MICHAEL: The profits were capitalized at £10,000, but the actual amount was £15,000.

Mr. PHILBRICK: From 1842 to 1861, dividends of 5 and 6 per cent. were paid, and the undivided profits were increased to the extent of 75 per cent.

Mr. MICHAEL: No. The capital employed to get these profits was in reality not the £20,000 only, but the £20,000 and the £7000 expended on works, making together £27,000.

Witness stated that when the company went to Parliament for their Act they were opposed by the County and General Gas Company. The Gravesend Company got their bill, and their opponents were thrown out on Standing Orders. They were in possession of the district, and the committee consequently were in their favour. In the House of Lords their deeds were produced, showing their capitalized profits, &c.

Mr. PHILBRICK: On the 19th of July, 1861, it was proposed by Mr. Brown, a proprietor, that, as the capital of the company had increased to £30,000, the additional sum of £10,000 should be divided amongst the shareholders, after the rate of £10 per share held by them.

Mr. MICHAEL: Every holder of a £20 share had a £10 share allotted to him, and every holder of two old shares had one new share of £20. The old shares were called in, and new certificates issued. When the new company was registered under the Joint-Stock Companies Act, the old company were paid in shares for what they transferred. Some of the capital was expended in the purchase of houses and land.

Witness: The sum of £7669 included money which was expended in purchasing the land on which the works were situated, as well as a house for the offices of the company, a new gasholder, &c. The entire £7669 could be shown to have been expended in various items for the extension of and addition to the works. If they had not used the surplus capital for that purpose they must have called up fresh capital.

Mr. PHILBRICK: What was the price of gas previous to 1861?

Witness: It varied.

The UMPIRE: What had been the highest price?

Witness: 10s. or 12s. during the ten years ending 1856.

This was the case for the company.

The UMPIRE inquired if Mr. Philbrick had any evidence which he wished to call.

Mr. PHILBRICK replied in the affirmative, and said that before he did so he wished to explain a matter about which there seemed to be some mistake. On the last occasion Mr. Barlow and Mr. Penny mentioned something about an engagement at Weymouth, and it so happened that they and other gentlemen were absent on that account. He was very anxious to examine them, but he was told they would not be back that night. He would go on with the evidence he had, but he did not propose to say anything at this time on the construction of the law, the mere manipulation of the accounts, or the result of figures, as he apprehended he could hardly do so till the whole of the facts were before the umpire.

The UMPIRE said there would be nothing saved by working in the dark, and therefore he hoped the learned counsel would proceed, but as briefly as he liked, to comment on the points, except those which were mere points of law.

Mr. PHILBRICK then said there were two questions upon which he wished to touch—namely, as the amount of capital on which the company were entitled to divide a maximum dividend of 10 per cent., and the price which should be paid for the public lights, which were fitted with burners to consume at the rate of 11,900 feet of gas per annum. His learned friend had contended, by the way in which he had put his case, that the company were entitled to charge something over 4s. 6d. per 1000 feet, which brought it to £2 13s. 8d. per lamp per annum, and added to this there would be 14s. 5d. for repairs, lighting, cleansing, &c., making the total amount £3 8s. 1d. With reference to the price of gas, excluding all question of dividend, the price stated by his friend was something like 2s. 10·79d., that being the actual cost of production to the company, as shown by their books. Now, the figures of the company had been submitted to the scrutiny of a gentleman of experience, who had also seen their mode of production and supply, and his opinion was that the figures were too high. The very fertile source of error was in the quantity of gas made and sold. The gas made was 45 millions, and that sold was stated to 38 millions, leaving 7 millions unaccounted for. The gas sold to private consumers might be ascertained, because it was registered by meter; but with regard to the gas supplied to the public it would be found that there had been an assumption all through that the burners on the public lights allowed 5 feet of gas to be consumed per hour, whereas it could be shown, beyond all doubt, that not more than 4 feet per hour was burned. This, then, was one great element of error in the calculations which the company had made. Then there was another matter, as to the mode of calculation, which would be explained by the gentleman he was about to call.

The UMPIRE: The question raised was as to capital. The meaning of the word capital in the Act was an important element in the case. Supposing he came to the conclusion that Mr. Michael was right in his view, and that he (Mr. Philbrick) was wrong, then Mr. Michael would have a very large margin indeed, because he would show that a great many years deficiency would have to be made up—that they would have to go back a considerable time before they could be restricted in their right to take to their full 10 per cent. Was Mr. Philbrick going to show sufficient inaccuracy in the books to prevent the 4s. 6d. per lamp from being charged for the public lights? It would require a very strong case indeed to get rid of that charge, and also to restrict the company from going back until they had made good the deficiencies of former years.

Mr. PHILBRICK: They could not make good the defaults of former years, prior to the formation of the company—viz., before the year 1863.

The UMPIRE: Ever since 1863 there had been a considerable falling off of statutory dividend, if Mr. Michael's assumption of the law was a right one.

Mr. PHILBRICK said, as he understood the figures, they had paid previous to and since 1863 a dividend of 8¾ per cent. They had taken out of the profits certain sums which ought to have been charged—those sums being applied to extensions and improvements of the works other than ordinary repairs. Since 1862, in the accounts which had been deposited with the clerk of the peace, under the provisions of the Gas-Works Act, there appeared charges of a nature that ought not to have been inserted.

The UMPIRE: This is a new question altogether. What I say is, that supposing you are entitled to tell them they must in the future behave themselves better than they have done in matters such as that, and that Mr. Michael is not right in his construction of the law, shall you, Mr. Philbrick, be able to make out sufficient inaccuracy in the accounts to show that the company are not entitled to charge the 4s. 6d. per lamp until they make up their 10 per cent. dividend.

Mr. PHILBRICK: According to figures which I am prepared to prove——

The UMPIRE: Really, if the thing turns so entirely upon the construction of the Act of Parliament as to make it possible that we shall have six or seven more meetings, it would be desirable that we should very seriously discuss the construction of that Act, in order that an opinion might at once be formed upon it. Of course, if it were decided in Mr. Michael's favour, it would put the commissioners out of court altogether.

Mr. PHILBRICK said that four years had elapsed since the passing of that Act. Last year there was a balance of £2000 undivided. During the four years the profits would have given to the directors 10 per cent.

The UMPIRE inquired if Mr. Philbrick thought it worth while to run the risk of five or six more meetings by going minutely into figures. If he (the umpire) should be against him, as Mr. Michael assumed, the commissioners, as he had said, would be out of court.

Mr. PHILBRICK did not think the case would last over the next day, and he should hope to close it then. The lithographed statement put in showed the estimated cost on the part of the company.

The UMPIRE: It shows the amount to be, including the dividend, 4s. 7½d. per 1000 feet.

Mr. PHILBRICK said that the company had not taken into account a certain sum which they had chosen to lay by as a reserve-fund, and had kept in hand capital which ought to have been divided. Instead of their bringing out the price of gas at 4s. 7½d., he brought it out at a fraction under 4s., assuming that his learned friend was right on the point of law. If he was wrong, than he (Mr. Philbrick) would certainly bring out the price of gas at not more than 3s. 6d. or 3s. 7d. per 1000 feet.

The UMPIRE: Then if Mr. Michael is right in assuming that he is entitled to pay so much annually to a reserve-fund, and so much to dividend, the price according to your figures ought to be a trifle under 4s., and of course the public lights would be less in proportion.

Mr. PHILBRICK: Certainly. The public lights ought not to be higher than those of the private consumers, but ought to be less. Again, if he took their table A he could show that the total of the coals carbonized was £1854 17s. 3d., instead of £2340 6s. 7d., as shown by the company's books. In regard to several items there were differences, but none, of course, as to rates and taxes, salaries, printing, and so forth. In bad debts and contingencies there was a difference of £25.

The UMPIRE: The principal differences are in the coals purchased, and labour and supervision.

Mr. PHILBRICK: There was a difference on the coal account of £500, and in labour and supervision nearly £300. He would proceed to call evidence.

Samuel Hughes, Esq., examined by Mr. PHILBRICK.

I am a civil engineer, having offices in Park Street, Westminster. For the past 26 or 27 years I have constantly devoted my attention to gas and gas questions. The subject of lighting towns and lighting public lamps has occupied a great deal of my time. I have been engaged in the lighting of a number of large and small towns throughout the kingdom. I have been consulted in this case, and have had before me copies of the parliamentary accounts which the company have been required to deposit with the clerk of the peace since the passing of the Act in 1863. Those accounts are excessively imperfect, and are utterly deficient in respect to answering the purposes for which they were intended. They are imperfect, and are mixed up—revenue and capital together. There are many charges which ought to be put to the capital account, and which had no business in the current expenditure. Taking, for example, the new station-meter and governor, £270—this was an item which was clearly chargeable to capital, and had no right to be inserted in the current expenditure of the year. By the Gas Clauses Act the accounts ought to be so kept as that the public should be able to know when the time had arrived for the reduction of the prices after the maximum dividend was obtained. It was impossible to say what profits had been made in any one year.

Mr. PHILBRICK: In estimating what was the profit for any one year they must not charge capital expenses to revenue account. There was wrongly charged to revenue £655, the cost of obtaining the Act of Parliament.

The UMPIRE: Such charges are borne by the company. It is a payment once for all.

Witness: There is an item of £461 for retorts, but the accounts are so mixed up that I could not tell whether this money referred to old retorts or new ones—it was impossible to tell. Mains and pipes were in the same position. Then there was dividend £1436, and a balance carried on of £1600.

The UMPIRE inquired what was the ordinary amount of dividend paid

Mr. MICHAEL said the directors regulated it according to profits. It was a shifting dividend.

Mr. PHILBRICK: They began their account in 1864, with £1600. They paid a dividend, whatever it was, and carried forward £2500, cash in hand and balance, and also £500 to the reserve-fund. It has been explained with some force that the account contained several items which were spread over a period of time. They started in 1866 with a balance of £2500; they subsequently carried over the same balance, and took 8 per cent. Last year they brought forward the balance £2269, and carried forward £1935, paying £1439 as dividend.

The UMPIRE did not see that the company had taken into expenditure the sum which had been put to the reserve-fund.

Mr. PHILBRICK said it had never been put there at all. The item for the reserve-fund had never been expended.

Witness: In the officers salaries there was a difference. I examined, as I said, the account A, under which the company claim 4s. 6d. per 1000 feet of gas. I see they charge coals carbonised and consumed £4140 14s. 10d. I have examined the books to a certain extent, but not in a manner that I should like, because I had no particulars given me as to what part of the books I could find certain accounts. I was told that the remainder of the books were in the possession of Mr. Southgate, and I had no means of getting at them, and therefore I was stopped in that way. I was told that the particulars were in the hands of Mr. Southgate, so that my examination of the books was very imperfect. I think the quantity of coal carbonized and consumed is correct. It corresponds with the quantity given by Mr. Southgate himself—4941 tons—namely, 4841 tons of Newcastle and 100 tons of cannel coal. Newcastle coals cost about 15s. 3d. per ton.

Mr. MICHAEL: 16s. 2d.

Witness had attended a good many valuations and arbitrations, and the figure taken had always been 15s. 3d.

Mr. MICHAEL: It was shown by Mr. Southgate that the price of the coal at the pit's mouth was 7s. 5d.; then there was freightage 7s. 3d. or 7s. 4d., which brought it to 14s. 9d.; then canal dues 6d., making it 15s. 3d.; and then cartage 11d.; altogether, 16s. 2d.

The UMPIRE thought the cost of the coal had not been disputed.

Witness: The chief difference was in the freight. The charge to the port of London was 6s. 3d., or 1s. less.

The UMPIRE: Are you going to show that they did not pay 16s. 2d. per ton?

Mr. HUGHES: Mr. Philbrick asked me how I made up the cost of the coal, and I gave him the answer.

The UMPIRE: We do not want any estimate of the cost. We have had it proved what the average cost was, and I thought that item was not disputed.

Mr. HUGHES: The difference arises chiefly in the carriage of the coals. The freightage will account for the difference. The charge to the port of London is only 6s. 3d. per ton.

The UMPIRE: But the company proved that they paid what they said they did, 16s. 2d. Mr. Hughes, of what earthly use is it for you to come here and tell us what the cost ought to be when the company tell us they do pay it?

Mr. HUGHES: That is an extreme case. I can make a conscientious estimate, knowing what the thing ought to cost.

The UMPIRE: You are not come here to show us that, under certain circumstances, you might save a shilling in freightage as against the actual fact that the payment is made by the company. That is not the intention of the Act.

Mr. HUGHES: I only say they confess to paying 1s. more for freight to Gravesend than would be charged to London.

The UMPIRE asked Mr. Hughes if he could swear, as a matter of fact, that the company had not paid it.

Mr. HUGHES said it was a most extraordinary thing that the company should pay 1s. more for a shorter than a longer distance.

The UMPIRE said he could not make a conscientious estimate of what a thing cost from what a witness apparently assumed. How could the witness, by theoretical figures, prove what the coal cost, and place that as being correct against the sum which was actually paid by the company? It would not do for him to jump to conclusions.

Witness: Any gas engineeer, in making an estimate, would, of course, consider the distance over which the coal was to be taken. They professed to pay 1s. more for freight to Gravesend than would be charged to London.

The UMPIRE said it was not an extraordinary thing for freights to be higher for some short distances than for long ones. He had often paid more for travelling 75 miles than for 150. Unless the witness was prepared to prove that the freightage was unreasonable, according to the arrangements which the company were under, his evidence in this respect amounted to nothing. He had not shaken the evidence of Mr. Southgate in regard to this item.

Mr. PHILBRICK said that the company were seeking to justify certain rates of expenditure and charges for the year to come, by showing what the coals cost in the past.

The UMPIRE said that unless Mr. Philbrick could show by absolute and comparative proof that there was something which made the cost of last year no test, he did not think he had a right to maintain that the company were not entitled to have the full benefit of all that was actually expended.

Mr. PHILBRICK said he could not take any item of actual payment and say that it had not, in fact, been paid. He might say that at once.

The UMPIRE: But you are claiming the right to say, "Here is Mr. Hughes, who thinks it extraordinary that they should pay 1s. more to Gravesend than if they went all the way to London." Suppose he does think it extraordinary, what does it matter, unless you can show it was done from some wrong motive?

Mr. PHILBRICK said that he did not impute anything wrong, as he had no right to do so.

The UMPIRE: Unless your witness is prepared to go much further, and to prove that there was no reason for this excess, and that he knows what the arrangements were and are, I do not think it amounts to anything.

Mr. PHILBRICK said he could not carry it further than that.

The UMPIRE: Don't you, Mr. Philbrick, as a barrister, think that——

Mr. PHILBRICK: If you were to ask me, as a barrister, I should say that my opinion, without a fee, was worth nothing (laughter).

The UMPIRE said that he was not bound to give an opinion against his own belief. He had not in the least, however, shaken the testimony of Mr. Southgate as to the fact of these payments being made. Unless Mr. Philbrick could by absolute affirmative proof show that these payments had not been made, he had not the right to say that the company were not to have the full benefit of all the actual expenditure.

Mr. PHILBRICK: Of course, they are entitled to what they actually paid.

The UMPIRE: All that Mr. Hughes says is, that it is a wonderful thing they should pay 1s. more for freight to Gravesend than to London. It does not, however, strike me at all as wonderful.

Mr. MICHAEL said that the company were obliged to charter several small vessels on account of the canal, and therefore they had not the advantage which they would have by chartering a large one. That explained the reason why they had to pay more, for it was evident that freightage by small colliers cost more than freightage by a large one.

The UMPIRE said that if they were to strike off 1s. per ton of coals they ought to be able to do so upon a sound basis. There ought to be some strong and affirmative case made out to show that they were justified in doing so. The testimony of Mr. Hughes appeared to be merely speculative. What evidence was there against the actual fact proved? If Mr. Hughes was advising anybody who was about starting a gas-work his testimony might be useful, but in this instance, where there was a fact sworn to, it did not form evidence upon which an umpire could rely. It did not amount to anything.

Mr. PHILBRICK: That would be the greatest difference in the whole account.

The UMPIRE: But if that one is unsound, the others may be. The question was almost reduced to one of law. Mr. Hughes's evidence did not prove that the payments were not made.

Mr. PHILBRICK: Of course, with regard to the question of the company's estimate of the quantity of gas for sale, our case again rests upon estimates.

The UMPIRE: So does theirs; so that is quite legitimate.

Witness wished to state that in the company's book the price of coal was carried out at 16s. 2d., but that in the lithographed sheet it was 16s. 10d.

Mr. MICHAEL: It is a folly to labour that matter. Mr. Hughes has made no allowance for 100 tons of cannel. He has taken it all at 16s. 2d.

Witness: That will not make it up.

The UMPIRE: The difference is very small.

Mr. MICHAEL: It does not make a difference of one halfpenny per ton.

Mr. PHILBRICK: If the umpire takes this view of the evidence it will very much reduce it practically to a legal question.

The UMPIRE thought so. It seemed to melt very much into a speculative case.

Mr. PHILBRICK: Then practically there will be no use in continuing the inquiry in that way.

The UMPIRE: Not with such a specimen as you have given us. I do not say you have not stronger specimens.

Mr. PHILBRICK: No doubt there are stronger specimens, but I do not think it wise or fitting for the public body I represent, after the intimation you have given, to continue the inquiry further in that direction.

Witness said that the gas company were in possession of the books and figures, and they gave an abstract, which he could not impugn except so far as an assumption went. They gave an abstract of their actual expenditure taken from the books, and he had no means of controverting it except by the opinion of gentlemen of experience.

The UMPIRE intimated that his view on this matter was so very strong as not to encourage them to go on.

Mr. PHILBRICK said that what the commissioners wished to show was that there had been a certain extravagance, or rather an excessive expenditure on the part of the company, which brought up the figures to what they were stated to be. Of course, if the money had been actually paid, he was not in a position to continue; indeed there would be no practical use in prolonging the inquiry, more especially after the intimation that had been given.

The UMPIRE: If you can show that coals have fallen enormously in price, then it might be taken into consideration.

Witness: Coals are as likely to go down in price as up.

The UMPIRE asked if there was any dispute as to the sale of residual products. Were they going to impeach them?

Mr. PHILBRICK: I cannot impeach actual facts.

Witness said that he was told at Gravesend that Mr. Southgate had the papers and figures, and that he was obliged to take them away to London; consequently he had no means of ascertaining what the sale of residuals amounted to, or of disputing the entries that had been made.

Mr. MICHAEL: When were these refusals?

Witness: Not actually refusals.

Mr. MICHAEL: Nothing was refused.

Mr. PHILBRICK: There was no refusal.

The UMPIRE: Again, this is only a small matter. We are not any distance towards the great question.

Mr. MICHAEL said the company did not profess to find food for comment. The books were there for Mr. Hughes to look at, and there was no objection to his doing so.

Mr. PHILBRICK: But it so happened that, when Mr. Hughes was there, all the books were not forthcoming.

The UMPIRE asked if there was any difference in the quantity of gas made and sold.

Witness said that that was important, as it would affect the price per 1000 feet. The estimate made by the company, showing the 38 millions of gas sold, rested partly on a certainty and partly on an uncertainty. There were no means of arriving at the quantity of gas burned in the public lamps. It was merely an arbitrary assumption. There was no meter test like that used by private consumers. Leakage was an important matter. He thought the 38 millions was a very small quantity, inasmuch as it amounted only to 7700 feet per ton. The quantity sold ought to exceed 8000 feet per ton. The returns of eight of the London companies showed the quantity of gas sold to be in the highest 8775, and the lowest 6882 feet per ton of coal, exclusive of leakage. Mr. Barlow had stated that 8000 feet for sale was a fair amount. The leakage, 16⅔ per cent., was also a matter of estimate.

The UMPIRE said that this agreed with what Mr. Barlow had stated.

Witness: Some of the companies use a large quantity of cannel coal. Five out of the thirteen London companies use a large portion.

Mr. MICHAEL said the small quantity which the Gravesend Company used would show their return to be correct.

The UMPIRE said that Mr. Philbrick would have a great deal more to do than this to show that the company might make a sufficiently large profit to enable them to reduce the price of gas.

Mr. PHILBRICK: Mr. Barlow said there was excessive leakage.

The UMPIRE: He said there was about an average amount of leakage. He said the general allowance for waste was 16⅔, or one-sixth, and that the average number of feet was 8000 to the ton to be sold.

Witness thought that, with 4841 tons of Newcastle and 100 tons of cannel coal, the quantity produced ought to be 38,500,000 feet.

The UMPIRE: You say that 7700 feet per ton showed an excessive amount of leakage?

Witness: It showed an excessive amount of leakage, and an error, he thought, in the quantity sold. In some way or other the company had too small a quantity for sale. Had the estimate of one-sixth been made a few years ago, he should have agreed with Mr. Barlow; but he knew that at present it was not to that extent.

The UMPIRE: I should very much like you to put your best leg foremost, and to bring forward the strong points of your case.

Mr. PHILBRICK: As I am not in a condition to say that any item of the expenditure is wrong, or was expended *malâ fide*, I feel the force of your remark.

The UMPIRE: Is there any evidence of mismanagement on the part of the company that you could obtain a *mandamus*?

Mr. PHILBRICK said the company evidently had not exercised ordinary care, or their losses would not have been so great. What he would show was that they had been extravagant, but he felt that that would not be sufficient.

The UMPIRE said that this was but a matter of opinion. There were opinions on both sides. If evidence could be brought to prove this satisfactorily, it would be worth while to go into it; but it would be no use relying upon mere speculation or opinions, which might or might not be worth anything. It could not be said that the mismanagement was so great that it ought to be taken into consideration.

Mr. PHILBRICK did not think he could put his case quite so high as that. He had brought Mr. Hughes merely to speak to specific facts.

A brief adjournment here took place. On re-assembling,

Mr. PHILBRICK said that he did not propose to go into the case further, except to call evidence on one point—namely, to show that the public lights ought to be supplied at a reduced figure, and at a figure different to what had been stated by Mr. Barlow.

Mr. PHILBRICK: Do you, Mr. Hughes, agree with Mr. Barlow, that the public consumer is to a gas company more unremunerative than the private one?

Witness: I do not agree with that. Gas engineers, thoroughly practical men, argue to the contrary. They say that public lighting is of great advantage to a company.

The UMPIRE: How is that?

Witness: Because the public consumer pays for his gas in one or two large sums. It was paid to a certainty, and without any risk of bad debts or anything of that sort. There was also no cost of collection, as there was when a great number of small accounts had to be collected. I know towns where 25 per cent. is deducted from large accounts.

The UMPIRE: There was one large customer, who was certain to pay, and there was but little expense of collection.

Witness: Just so.

The UMPIRE: Mr. Barlow had said that the public lamps required separate pipes, which caused increased leakage and extraordinary waste; and, consequently, there was not that advantage which was said to be derivable from them.

Mr. PHILBRICK: It has been objected by Mr. Barlow that the fact of each lamp having a separate service, and therefore an increased leakage, would compensate for these advantages.

Mr. HUGHES: A gas engineer, in the present day, ought to be ashamed of bringing forward such an argument.

The UMPIRE: It is quite enough, Mr. Hughes, to answer questions. I do not like to have speeches.

Mr. PHILBRICK: Do you agree with the opinion expressed, that there is now a greater amount of leakage than there formerly was?

Witness expressed his dissent, and said that in his opinion there was not a great amount of leakage at the present day. The service-pipes were better laid, and were bored and not punched in as they formerly were. There is a greater knowledge now as to making the junctions, and consequently the leakage was much smaller than it used to be. Every joint was a source of weakness, and imperfect joints allowed of leakage. In the present day there is a greater knowledge amongst the workmen in respect to making joints, and a much smaller amount of leakage was the consequence. Every public lamp was lit by means of a separate service-pipe from the main. If the junctions were properly made there ought to be no leakage at all, or at all events none to an appreciable extent. The more frequently service-pipes were disturbed in the streets the more liable they were to accidents, and consequently leakage. He should say the pipes for the private consumers were more frequently disturbed than the public ones. Private consumers more frequently required changes in their burners. In public lamps there was no change required, for when once a burner was put in them it remained.

The UMPIRE: When the private consumers shut off their supply at night, did it cause any difference in the state of the public lights, or disadvantage to the company?

Witness: When greater pressure was caused on the public lights it would be counteracted in some way. The company would take care to take off the pressure at the gasholder, or alter the street governors; therefore, as a rule, it was found that the pressure on the public lights went down as the private supply was taken off. Regulator-burners might be used, but they were instruments to which there were many objections. He did not approve of them at all, and never used them in towns over which he had any control in the lighting. He preferred the meter system. The regulator-burner never worked strictly and mathematically well. If it was set at a certain pressure it was well known that it would not work below that pressure, but as time went on it became corroded, and ceased to regulate, and then it became worse than nothing.

The UMPIRE: A continual consumption of gas during the night would interfere, I suppose, with the economical working of a gas company?

Witness thought it was of advantage to a company to have a source of consumption during the night. The furnaces at the works would be obliged to be kept in, and therefore it was an advantage when the company were able to continue their supply during the night.

Mr. PHILBRICK: Is it a matter well ascertained that there is a difference always made in favour of public consumers with regard to price?

Witness could not say there was always a difference, but in a great majority of cases there was. He could name 150 towns, and in the majority of those the charge to the public was only three-fourths of that which was charged to the private consumer.

The UMPIRE: Were those picked towns?

Witness: No; towns big and little which he could mention. In some cases the public lighting was fixed at a very much lower price.

Cross-examined by Mr. MICHAEL: Where does leakage generally occur?

Witness: That is a very disputed question.

Mr. MICHAEL: I should like to have your opinion.

Witness: I would not give one. It is a very difficult question to answer. Some persons even assert that gas passes through the solid masses of the pipes; others say that the principal leakage is at the large joints of the mains, and others at the juncture of the service-pipes with the mains. It is a very difficult matter to say where gas escapes.

Mr. MICHAEL: Although your attention has been devoted for many years to the question of gas supply, you are unable to answer the question?

Witness: Men who have given greater attention to it than I have are unable to state satisfactorily where the principal leakage occurs.

Mr. MICHAEL: Looking at your general experience, would you not expect the leakage to be where the joints are made in the various pipes?

Witness: I should expect to find some leakage there. If you mean the whole leakage, then it is possible there are other places where it occurs. There may be leakage at the retorts; and again, when the retort-lids are raised, a great flame often arises there.

Mr. MICHAEL: Would you not expect leakage to occur where the various pipes were joined?

Witness: I should expect to find leakage there certainly, both in the large mains and in the service-pipes, but not to the extent that there used to be. There was another thing also to be included in the losses—the condensation of gas in the pipes. The pipes are generally colder than the gas

which passes through them, and therefore condensation to some degree often takes place.

The UMPIRE asked for further explanation.

Witness said that gas being a body at a higher temperature than the service-pipe, there was a tendency to condense it into fluid, and syphon-pipes were consequently fixed in the mains. It was found that water would collect in the pipes, beside the water which had never been thoroughly expelled from the gas.

Mr. MICHAEL: Is it in your experience that a considerable quantity of leakage does occur in fact at the junction of the service-pipes with the mains?

Witness: Some quantity did, no doubt; but it was prevented by the improved mode of making junctions.

Mr. MICHAEL: Is it not the case that leakage does so continually occur?

Witness: These are all theoretical questions. I cannot measure the quantity that occurs at the junctions. A great deal did occur, but what quantity I cannot say. An imperceptible escape of gas from each of a number of joints often forms a considerable element. In the north of England the leakage is nothing like it is in this part of the kingdom.

Mr. MICHAEL: Let us go to Gravesend, and not to the north.

Witness: The service system was bad where there was great leakage at the joints.

Mr. MICHAEL: Is it a fact that in proportion to the length of the pipes you expect condensation, and therefore loss to the company?

Witness: I should expect some increase of condensation in a very great length of pipes, but not in the length which exists here—six or seven miles.

Mr. MICHAEL: Supposing there were twelve miles of mains, and some parts of a town supplied with gas were below the level of the gas-works, would that of necessity cause an increase in the pressure?

Witness: It would, if they were lower to any great extent.

Mr. MICHAEL: Does leakage occur in proportion to the length of the mains and the pressure employed in forcing the gas?

Witness: I do not exactly know that leakage occurs in proportion to the length of the mains, but, theoretically, according to the pressure.

The UMPIRE: There is leakage in the mains, beyond doubt; and, therefore, the longer they are, the greater must of necessity be the leakage.

Mr. MICHAEL: In judging whether public lights are advantageous or otherwise to a gas company, have you taken into calculation the unproductive mains?

Witness: I have very seldom met with a case of the sort, where mains were totally unproductive.

Mr. MICHAEL: Do you know that in Gravesend they were obliged to lay down mains for the purpose of supplying the public lights?

Witness: It is a vague question that I cannot answer. If mains had been laid down for public lighting only, they would not be unproductive. This is no element in my case.

Mr. MICHAEL: You say that in private houses they are more likely to alter the burners?

Witness: Private consumers very often have alterations made.

Mr. MICHAEL: Would these alterations cause more leakage?

Witness: I cannot say that they would. There is less disturbance in the public lights than in those of private consumers. Workmen might make joints without there being proper supervision, and leakage might occur, but I do not think it would be so much as it has been represented. Leakage might be reduced very much. It was just as likely to occur at the junction of the mains with the services of private consumers as at the junction of the services which supplied the public lights, if proper supervision was not used.

Mr. MICHAEL: I think you gave evidence on one occasion with respect to stale gas; what do you mean by that?

Witness: Gas made more than twelve hours, when it becomes deteriorated.

Mr. MICHAEL: Do you wish us to understand that gas is not so good after twelve hours?

Witness: I think so.

Mr. MICHAEL: Do you think that gas ought to be supplied to the consumer immediately after it is made?

Witness replied in the affirmative.

Mr. MICHAEL: Do you mean that you always expressed an opinion that it was desirable that gas, as soon as it got into the holder, should be distributed to the consumer?

Witness: It is cooled almost as soon as it gets into the holder, and therefore it ought to be supplied at once. I do not remember having given evidence upon this point.

Mr. MICHAEL: Then you are of opinion that gas ought to be delivered within twelve hours after it is made?

Witness: I believe that gas begins to lose some of its lighting powers soon after it gets into the holder.

Mr. MICHAEL: Upon whom would the loss fall?

Witness: Partly upon the consumer, who would have deteriorated gas.

Mr. MICHAEL: Supposing gas was delivered warm?

Witness: I will not say warm gas. It ought to have nothing like a warm temperature.

Mr. MICHAEL: Do you mean to say that gas as ordinarily delivered into a gasholder is as cool as it is when it is delivered to the customer?

Witness: I say that it cools in the pipes.

Mr. MICHAEL: Is not the consequence of that cooling a cause of condensation, and consequently a smaller quantity of gas. If condensation gives a smaller quantity of gas, would it not be better to send hot gas through the pipes, in order that a larger space might be occupied.

Witness: Certainly not; on the contrary.

Mr. MICHAEL: When gas is delivered into a gasholder, is it not in larger volume than when it is allowed to remain there for twelve hours?

Witness: It might be slightly larger.

Mr. MICHAEL: Would not the company benefit by passing gas, when in the larger volume, through the consumers meters?

Witness: No; it would be likely to cause stoppages by depositing tar, and therefore serious injury might arise.

Mr. MICHAEL: You say that it is advantageous to the company to have a continuous night supply?

Witness: It must be obvious that if a gas company did not send out gas at night they would have to store it, and to do that they would have to make it at a higher power, or they would have to reduce their furnaces, which would be very inconvenient. It would not be of advantage if the company were obliged to let out the heat from their furnaces, because it would be expensive to get it up again.

Mr. MICHAEL: How much gas would be required to be made every night to meet the supply of the public lamps?

Witness: That I cannot tell. If we take 300 as the number of the lamps, and the consumption at 4 feet, that would give 1200 feet per hour. If the lamps were lit for eight hours, the quantity required would be 9600 feet; and, according to the statement we have heard, a ton or a ton and a half of coal would be consumed in its manufacture. Three or four retorts would be required to make that quantity; one retort would make about 2700 feet per day. They had 57 retorts at Gravesend. Of course, in mid-winter, when the nights were sixteen hours long, more than four retorts would be required; double the number would be employed.

Mr. MICHAEL said he had nothing further to ask the witness.

Mr. PHILBRICK: No more have I. Had the other gentlemen been present they would have given some evidence as regards both the private and the public consumer. I do not feel justified, however, in asking for an adjournment of the case, as it would subject the parties to the expense of another day's proceedings, and therefore it becomes my duty to state what the case of the commissioners really is. The learned counsel then said that, as a public body, it was obvious they had no private interests to serve; they were guardians of a public fund, and therefore they had a duty in common to discharge to their constituents, and they never could have done it unless they had taken the steps they had. Their contention was that the ratepayers of Gravesend ought to be treated in the same manner, in respect to the price of gas, as the private consumers were; in fact, they considered that the public were entitled to an advantage over the private consumer, and this they now sought to effect. He would call attention, in the first place, to the turn which the matter had taken since last they met. His learned friend, on the part of the gas company, had since then thought proper to state what the figures were, both in regard to the cost of gas and the price at which the company were prepared to supply it to the town. The history of the company had been very clearly stated to them by Mr. Southgate, and it was beyond doubt that the maximum price they could charge for their gas to the private as well as to the public consumer was 5s. per 1000 feet. At present the price charged to the private consumer was 4s. 6d., and they sought to charge the same rate for the public lamps, which the Town Commissioners objected to. It had been shown that the actual cost of manufacture and distribution was 2s. 10·79d. Now, in reference to the figure at which the company had said they were compelled to charge, he was there to contend that some of the charges which the company had actually incurred ought to have been saved, and that the expenditure had been greater than it ought to have been; still he could not show, nor had he any intention of doing so, that this increased expenditure had been wilfully caused, or with any idea of defrauding either the private or public consumer. The commissioners did not seek to do that; they did not say there was any breach of trust on the part of the company, who, after all, were trustees for the public; what they said was that with proper management, with greater assiduity and care, they ought to be capable of maintaining their works and giving the public the benefit of a reduction in the price of their gas. He felt that he had conceded that which doubtless was of great advantage to his learned friend, because he had only called a small portion of the evidence he might have adduced; still he was quite content to rest his case as it stood, feeling satisfied that he had distinctly proved, as shown by their own statement, that the public were entitled to a concession, and that the company were charging more for their commodity than they were justified in doing. The commissioners felt they were abundantly justified in asking the umpire to fix the price of gas for the future, and which, by reason of that reference, he was entitled to do. The learned gentleman then gave a succinct history of the company, and detailed the manner in which the price of gas had been raised from time to time. In June, 1866, the price per public lamp was increased to £3 10s. per annum, and in the following month the commissioners resolved that this increase was unfair and unreasonable, and that they ought to be served at the same price that they had previously paid—namely, £3 5s.—and it was further determined that unless the company would agree to this they would exercise their powers under the Act, and submit the matter to arbitration. The directors of the company replied to the effect that they could not make a reduction consistently with the performance of their duty, and the uncourteous terms in which their resolution was passed left no alternative but to proceed in the manner they had done. The commissioners, in October of that year, offered to pay 3s. 9d. per 1000 feet, as per regulator burner, for the public lamps, but the company declined to name a price or supply by measurement, urging as a reason that a 4-feet burner instead of a 5-feet one would not be satisfactory to the public, and a more extraordinary resolution than that passed by them in reference to this matter was, he supposed, never seen. A reference became inevitable, and the first question, he apprehended, which the court would have to decide was what price should be paid per 1000 feet of gas. Upon table A it had been shown by his learned friend that the cost of manufacturing, distributing, &c., was nearly 2s. 11d. It was impossible for him (Mr. Philbrick) to dispute the actual figures; he felt, indeed, that he was not in a position to alter these figures, and for the purposes of that inquiry he would accept them. Having accepted those figures, he would at once pass to the discussion of what he felt to be one of the great principles involved in this case. In the first place, the account purported to be an account of the price of gas in the year ending June, 1867, and the first item with which he would deal would be the annual contributions to the reserve-fund of £300. The reserve-fund was a fund that was mentioned in the 31st section of the Gas Clauses Act. It was there stated that, "If the profits of the undertaking in any one year amount to a larger sum than is sufficient, after making up the deficiency in the dividends of any previous year, as aforesaid, to make a dividend at the prescribed rate, the excess beyond the sum necessary for such purpose shall from time to time be invested in Government or other securities, and the dividends and interest arising from such securities shall also be invested in the same or other like securities, in order that the same may accumulate at compound interest, until the fund so formed amounts to the prescribed sum; or, if no sum be prescribed, a sum equal to one-tenth of the nominal capital of the undertakers, which sum shall form a reserved fund to answer any deficiency which may from time to time happen in the amount of divisible profits, or to meet any extraordinary claim or payment which may at any time arise against the undertakers; and if such fund be at any time reduced, it may therefore be again restored to the said sum, and so from time to time as often as such reduction shall happen." Now, it was clear by this Act that the gas company had a right to have a reserve-fund of £3000, a tenth of which they could put by in each year; and therefore it was that the item found it way into the table A. But the question he wished to raise was, whether they were entitled to charge it there; and in answer to that he said no. The words of the section were that the excess from time to time should be invested in Government or other securities, until the amount so formed should amount to the prescribed sum, or, if no sum be prescribed, a sum equal to one-tenth of the nominal capital of the company. Had they invested their excess? It appeared by their books that not a farthing had been previously charged

with respect to a contribution to a reserved fund. They set forth in the account of the 24th of June, 1866, with £2269. They then appeared to give credit for certain items, interest on deposit account, dividend, and stock, and then they paid a dividend to the shareholders of £2436, and carried forward a balance of £1935 11s. 9d. From first to last, they did not appear to have carried the £300 to the reserve-fund, and they had not invested in Government or other securities any excess beyond the sum necessary to pay their dividend.

The UMPIRE: But the section only applied where the clear profits of the undertaking in any year amounted to a larger sum than was sufficient to make up the dividend at the prescribed rate of 10 per cent. The sum must be sufficient after making up the deficiencies of previous years, and then the excess was to be invested.

Mr. PHILBRICK: It was clear they could not put a single contribution to their reserve-fund until they had made up their dividends to 10 per cent.

The UMPIRE: Are they entitled to 10 per cent.? Can they realize that?

Mr. PHILBRICK: That is another question altogether. It might be done by keeping the price of gas up. They could not, however, put it up beyond the prescribed rate.

The UMPIRE: They could go up to 5s. per 1000 if they chose, in order to make 10 per cent. There was no reason why they should not charge it if they chose to do so, and provided they did not exceed the limits of the 31st section.

Mr. PHILBRICK said his argument was this, that the company were charging to private consumers 4s. 6d. per 1000 feet, and they claimed to charge the same amount for the public lamps, and they put before the court a statement showing how their claim was made up, and how their figures were supported; and in order to do so they claimed a reduction of £300 for a reserve-fund. Now, he maintained that, in order to take out a single penny for a reserve-fund, they must bring themselves within the terms of the 31st section, which they had not done, and therefore they could not support their claim, and he was entitled to have it struck out altogether.

The UMPIRE: The contribution is a sum contributed to make up the deficiencies of the previous dividends.

Mr. PHILBRICK: By the 30th section of the Gas Clauses Act it was provided that "the profits of the undertaking to be divided amongst the undertakers in any year shall not exceed the prescribed rate; or where no rate is prescribed they shall not exceed the rate of £10 in the £100 by the year on the paid-up capital in the undertaking, which in any case shall be deemed the prescribed rate unless a larger dividend be at any time necessary to make up the deficiency of any previous dividend which shall have fallen short of the said yearly rate." He could well understand why the Legislature inserted a section like section 31. He said it was not to make up arrears that money should be devoted—it must be spent by the company or disposed of by them—they had no right to put it to the reserved fund. It was not a fact that they were entitled by this section to make up the deficiency until after 10 per cent. had been paid.

The UMPIRE: The view you take is, that they could not in any year assign the profits towards any previous year, but that they must only do so in the case where the clear profits amount to above 10 per cent.

Mr. PHILBRICK: If the profits allowed of 10 per cent. they must pay it. They could not say that they would take 8 per cent., and leave 2 per cent. for back years. It must be the quantity above the 10 per cent. that was to make up the deficiency. The 31st section said that where the profits of the undertaking in any year amounted to above 10 per cent., and above any amount that might be required for back dividends, then the excess should be applied to a reserve-fund. It was clear that if the profits did not amount to a larger sum than was sufficient for this purpose they could not carry a farthing to a reserve-fund, because the case which the Legislature had contemplated had not arisen. They were bound to divide the profits when they were earned, and when they reached 10 per cent., then the public were entitled to a reduction in the price of their gas. The next question to which he would draw the attention of the court was that of dividend. The company claimed to be entitled to 10 per cent. upon their capital of £30,000. Whether they were legally so entitled was a serious question for consideration. By the 30th section, the profits to be divided in any year were not to exceed £10 in every £100 in the year on the paid-up capital of the undertaking; and in reference to these words, "paid-up capital," he would make a few observations. What did those words mean? Did they mean capital actually paid up, or something different to that? Paid-up capital meant capital paid up, not capital subscribed to, and upon which a liability existed; it meant the amount which the shareholders had actually paid up. There was a difference between capital subscribed for and the paid-up capital which a company had for trade. The Legislature laid a distinction between the paid-up capital on the one hand and the nominal capital on the other. The prescribed rate of profit, within the meaning of the 31st section, meant the prescribed rate on the capital which was actually paid up, and not on the nominal capital of the company. He could not conceive what words could be clearer. He submitted, therefore, that the dividend which they were entitled to charge was a dividend only upon the capital paid up on the shares. The learned gentleman then reverted to the question of costs, because, as he said, the umpire had a discretionary power to deal with it in making the award. He would ask him to look at the resolutions and correspondence which had passed between the parties. The company declined to give particulars, or to come to terms, and therefore the commissioners had been forced to resort to arbitration. It was not until that morning that the cost price per 1000 feet had been stated, and all along the commissioners had been kept in the dark. They had clearly been compelled to seek protection when they ought not to, and therefore he asked for the commissioners to be indemnified by the company for any losses they might have sustained. The company could not complain of these proceedidgs being forced upon them, and therefore they ought to be answerable for the costs.

FOURTH DAY—FRIDAY, DEC. 6.

Mr. MICHAEL proceeded to address the court on behalf of the company. He said that the matter would be considerably lightened, as there was no question to determine save the important one—namely, at what price the gas should be supplied to the public consumer. They had agreed as to the cost of manufacture, and the question left was merely one in regard to the terms at which the gas should be supplied. That would be the first great question. The second question would be whether there were any circumstances that should take public lighting out of the category of general charge. His friend had dwelt upon four topics—first, that the company were not entitled to charge anything to the reserved fund; secondly, that the capital was to be estimated, not at what had been put down, but at a much smaller sum; thirdly, that the public lighting ought to be charged at a lower rate than private lighting; and, fourthly, that the costs ought to fall on the gas company, and not on the commissioners. First, he would deal with the question of costs, which his learned friend had said ought to fall upon the company. To save time he would direct their attention to the causes which had led to the company being compelled, as it were, to raise the price of gas to the public. Finding they were unable to pay the dividend to which the proprietors were entitled, without any question of the reserved fund, they found it necessary to increase the price of gas as supplied to the public lamps from £3 5s. to £3 10s. per annum. To this the commissioners replied, stating that the demand was unfair and unreasonable. The directors of the company acted strictly as business men. They said that the circumstances contemplated by their Act had arisen, and that, in justice to themselves and their shareholders, they were compelled to fall upon the Act for protection. The commissioners had complained that the company had refused to name any price. Now, they had named 5s., which was the price stated by the Act; and it was very probable that they would have named a second price, had not the demand which the commissioners made been coupled with conditions which the company found it impossible to comply. The commissioners proposed to pay by measure—by the 4-feet regulator burner, by the average meter system—instead of the specific price which had been agreed upon previously, and for which they had been charged £3 5s. per annum, and which included everything. They were unable to agree, and then the company felt that the dispute ought to be settled by arbitration, in accordance with the provisions of the Act. All along the gas company evinced great business talent and discretion in the course they had adopted, and in reality they felt that the commissioners had no cause of complaint. That court had been called to determine what the price should be. It was no fault of theirs that had brought them there, for they had merely followed out the terms, and charged the price that was agreed upon between themselves and the commissioners four or five years ago. It being therefore no fault of the company, he submitted they ought not to be mulcted in the matter of costs, as his learned friend had sought to establish. So much, then, for that matter. They then came to a much more important point. His friend complained that the company had attempted to dictate to the commissioners what quantity of gas should be burnt, and that they should have stated that the four feet which the commissioners proposed to burn was insufficient, and his friend produced a simile. He said it was the same as if his butcher had dictated to him whether he should have a larger or a smaller joint of beef; but the matter was totally different in this case, from the fact, also produced by his friend, that they, as a company, were trustees for the public, and had not merely to undertake the supply of an article. They were encumbered by the proviso that they should keep the family of his friend and himself in condition, and that they should keep up his good looks; but if they supplied to the public, through the commissioners, an insufficient article to light the public streets, then the complaint would not fall on the commissioners, but on the company. Therefore, being trustees, they were bound to act as between the commissioners and the public. They said to the commissioners: "You want to supply an article to the public which will not fulfil the conditions that are entailed upon us, namely, that the public streets should be sufficiently lighted by you as commissioners." Therefore he thought his friend's complaint fell to the ground. If they had not pointed out to the commissioners what they felt to be right, they would have been deficient in their duty. They said to the commissioners: "You are about to try a new system of lighting which our experience, which is greater than yours, convinces us will be insufficient for the purpose." Instead of complaining, the commissioners ought rather to have been thankful to them for keeping them out of an error. Next, he would come to the question of the reserved fund, and there he must point at once to an error which did away with the whole argument of his friend in dealing with the matter. It was one that he was extremely likely to fall into, but when once explained it would be seen how it underlay the whole of his figures. When they came to the lithographed sheet marked A, which gave them the cost of the gas, they were not dealing with absolute figures; they were dealing entirely with estimates from beginning to end, and although they had such figures as enabled them to make a portion of the estimates certain, yet the calculations never rose beyond the position of estimates. In fact it was an estimate based merely on experience. It was an estimate which, in the most material part of it, was not a fact realized in times past, but it was an estimate of what price in the future the company would be able to supply the public with gas. Under the Act of Parliament they were entitled to the absolute cost of the gas, to the prescribed rate of dividend, and to the amount necessary for making up the reserved fund. His friend began by commenting on the accounts sent in by the clerk of the peace in accordance with the provisions of the Act. He explained himself, and through his witnesses, that these accounts were insufficient. Now, in truth, they were fuller than any he had ever seen sent to clerks of the peace. They were very far in excess of what the Act required them to be. The words of the Act were, "That there should be an abstract of the accounts sent to the clerk of the peace's office," but this was absolutely a total account of receipt and expenditure by the company for the whole year. They had given, under every head, every single item, instead of a mere abstract of the receipts and expenditure. To have complied with the Act of Parliament, it would have been sufficient to have put one single line of receipts and expenditure. His friend, in commenting upon these accounts, said that during the four years since the Act of Parliament was obtained, there had been a failure to obtain a dividend necessary to pay 10 per cent. to the extent of £1500, and that, if spread over four years, was a diminution of 1¼ per cent. for every year. And he said, "I compare it with these accounts which have been sent in, and I find there is such an excess of profits here that, if there had been proper management, there ought to have been not only 10 per cent. but a very large sum over, carried to the reserve-fund." His friend, unfortunately for himself, had fallen into two great errors. The first was, that he had not seen that in this account the dividend for the last year appeared as an item on the debit side, which, when struck off, left only £1598 16s. 10d. to pay the dividends of the current year. The £1598 16s. 10d. was not in excess after paying the dividend, but the £1436 must be taken from £1970; and if the gas company's proceedings were cut short at the moment where those accounts ended, that would have to be taken from the dividend of the current year, because they would see that this last item, which spoke of dividend, was not dividend taken out from the year, but the dividend of last year. Therefore it was dividend which accrued due and was paid out of the £1970, which was the correct item with which the account commenced; therefore if the existence of the company was suspended, and all gas-making ceased at that time, there would be only £1598 16s. 10d. to pay the 10 per cent.—a sum professedly too small for the purpose. His friend also complained that in the account that was handed to the clerk of the peace there would appear to be mixed up items of capital and revenue; but he had forgotten, in studying that account, to see that those amounts, although they appeared there as paid

in that year, were not in reality paid in the assets of the company carried over from previous receipts. He would show that while it was a fact that about £2900 were carried over in assets to pay those amounts, it would not be necessary for him to do more than to point attention to the fact that in that year, when the total revenue from gas was £7074 10s., and for other things £1257, making a total of £8500, the whole charge for coals was only £2729 as contrasted with the last year, when there had been the very large increase of £4641. That one point was sufficient to show how different circumstances were when the company took over a large stock of assets of the former company, because it was an entire change of the company in 1863 when the bill was passed. That was handing over the joint-stock company to another incorporated company. There was this difference—that while the company had been carried on with £2729 worth of coals in 1864, it required £4641 worth of coals in 1867. And there was no evidence that there was any increase in prices to call for such an increase. Then as to the reserve-fund, his friend said that, looking at the 30th and 31st clauses of the Act, they were not entitled to put anything to the reserved fund, unless there had been realized that year 10 per cent. dividend and something beyond; that, in fact, the reserved fund only accrued when they had realized 10 per cent. He perfectly agreed with his friend in that contention. If the gas company had earned in any one year but 9 per cent., they could not take any moneys from the profits of the company and say, "Now we will commence the reserve-fund and only pay 5 per cent." The only thing they could do with their surplus was to pay back dividends which had not been made up to 10 per cent., and it was only after that that they could make the reserve-fund. But his friend said that if the account had been so made out that a portion of the £1500 had been paid to the reserved fund, it must have been added to the £300. He laboured under a mistake. The £1500 had nothing to do with the account. It was as though it never existed. That was as an estimate of something to come. What was it that was contemplated by the Legislature in allowing that reserved fund to accumulate? He would call attention to the 30th and 31st clauses to show that the reserved fund was to meet extraordinary contingencies which might arise from time to time, and which otherwise, if not met by that reserve-fund, would cause the dividend to go below 10 per cent. Suppose any extraordinary accident at the works, or a contingency of any such kind, the company might from time to time put by money towards the reserved fund, in order that the dividend, in the event of such an accident, might not descend below 10 per cent. In the first place, therefore, they had to provide for their statutory dividend of 10 per cent., which had not been paid; and, secondly, they had to provide for any extraordinary contingency, the reserved fund accumulating from time to time until "the same shall have amounted to one-tenth of the nominal capital of the company." That was to say, supposing the company, according to the strict terms of the Act, had an original capital of £100,000, and had only paid up £1000, they would in any single year, by the strict interpretation of the Act, be entitled to take out of the profits of the concern—first 10 per cent. on the £1000, and then £10,000—viz., one-tenth of the whole nominal capital. If, therefore, in the estimate they had strictly carried out the Act of Parliament, they might have put down the dividend on the capital, whatever that might be, at 10 per cent., and then, instead of putting down one-tenth of the profits, they might have put down one-tenth of the £30,000—the nominal capital—or £3000 a year, instead of £300; but this would have been manifestly unfair, because it was an estimate of what in future they could supply gas at, and therefore they had taken the reserved fund as if it were spread over a period of ten years. They must remember it was not merely money accruing from ime to time, but money accruing, with the addition of interest and compound interest, until it should amount to £3000. He was dealing with absolute figures. There could be no contention that they were not allowed out of their capital, whether nominal or real, to put by a reserved fund of £3000, but it would be manifestly unfair to burthen their estimate with the whole of that reserved fund in any one year. They had, therefore, taken it for ten years, and they said it was fair that they should be allowed one-tenth of the total of the reserved fund put into the estimate which they had to make in order to ascertain the price at which they could supply gas to the public. What was the estimate? The 2s. 10·79d. showed the cost absolutely at which gas could be made in futute. Thus, after paying 2s. 10d., they were entitled to 10 per cent. dividend, and something more—to such a sum for laying aside as would meet any loss in future years, or any contingency arising out of the carrying on of the works. It was perfectly fallacious, therefore, to say that in any estimate of the kind a reserved fund should not appear, for in putting in that item they were only carrying out the terms of the Act of Parliament, which said, "You shall receive for your gas, first, the price which it cost you to make it; secondly, 10 per cent. of dividend on your capital; and, thirdly, a contribution to your reserved fund, calculated on the whole, at one-tenth of the nominal capital which represented the company." They were entitled, he maintained, to charge in any one year, not £300 but £3000 to the reserved fund, and therefore he thought they had acted with moderation in extending it over ten years. The next point to which he would allude was a very important one—viz., what was the existing capital of the company. He should contend, following his friend's definition, that "paid-up capital" was not a word to be inserted in the Act of Parliament without a meaning, but that "paid up" meant capital in shares upon which no liability existed. This definition he would adopt. His friend had said the paid-up capital meant capital on which no liability existed—capital spread over shares of any given amount, upon which the whole of the amount had been called up and paid in some way or other, and on which no liability existed. Mr. Michael then entered into the history of the company. They started with a very small and insufficient capital, as many other companies did. They started under a Deed of Settlement, and they were at liberty to charge what they liked for their gas. They had a monopoly, and could make what profit they liked, and they could at any time distribute that profit amongst their shareholders. But it was impossible, in the proper conduct of their business, that they could go on with the small capital they had raised, and feeling the pressure always placed upon gas companies by the public from time to time to extend their works, in order to meet the additional demand, they said, "No; we will not pay the 10 or 15 per cent. we have earned in the year, but it will be more for our interest to lay it aside, and to reinvest it, in order that we may extend our works, for which purpose it was necessary that additional capital should be raised." The amount so invested for extensions was as much capital as though the price had been given to it, calling on the individual shareholders to receive the money with one hand and give it back with the other. He laid it down as a general principle that where money had been saved from profits and had been expended for capital purposes, and had been declared by resolution of shareholders under a Deed of Settlement or the Joint-Stock Companies Act to be capital, and shares had been issued upon which no liability further existed, that such shares were, to all intents and purposes, paid-up capital within the terms of that section of the Act. His case would be strong if he left it there, but he would see what the progress of the company had been. After they had called up £4000 and a subsequent £1000, and after they had expended large sums in extensions, it was found that the works could no longer be carried on, and, in order to meet the public demand, it was essentially necessary that new shares should be raised, and the existing proprietors, for some reason or the other, determined to go to the public and say, "Will you form a company to supply in future the town with gas? We are willing to sell you our works for £15,000. It will be necessary for you further to invest the sum of £5000. We will not ask you for any money, but will take shares in the new company instead." The agreement was ratified, and the company was registered under the Joint-Stock Companies Act as having a capital of £20,000, and the shares were issued, paid-up shares of £20 each, and these, he contended, were as much paid-up shares as though none of the proceedings had taken place. They were as much paid-up shares and paid-up capital as though every individual share had been taken by so many individual shareholders, and the £20,000 was represented by 1000 different proprietors. The mere accident of some of the old proprietors joining the new company did not alter the circumstances. The purchase and sale had taken place, the works were paid for in shares, and it was as though the company had started for the first time. In fact it was a new company starting *de novo* with a capital of £20,000 paid up. Again, as to the accumulation of money, about which his friend had said so much, he would observe that had the shareholders, instead of investing that money in their profits, chosen to invest it at compound interest in any other way, they would have realized a much larger sum than they did when they sold their works. It had been a loss rather than a gain. Having been registered as a company under the Joint-Stock Companies Act, they found it necessary, having gone on spending money for the extension of the works, and having no money without making a call, to pursue the same course—to allow one-half of their profits to accumulate by being expended for capital purposes. At the end of fourteen years they had expended £7700 for the extension of the works, and had a sum of £8000. Could it be contended they had not the power to distribute that £8000 among themselves instead of making calls upon new shares—in fact, to reconstitute the company? The £17,000 might have been put into their own pockets, but instead of that they were willing, for the interest of the public, to invest it in new shares, in the proportion of one half share to every one of the old shares. It was a payment of capital, then, precisely as though a call had been made. They were shares upon which no further liability existed; they were represented in the books of the company as fully paid-up shares, thus augmenting the capital to £30,000, and sinking in the public interest between £7000 and £8000; because if they had looked to their own interest strictly they might have valued the works at £37,000. Circumstances rendered it desirable that they should apply to Parliament to be incorporated, in order to prevent opposition from without. They wanted power to take up the streets and to have a monopoly of the supply. This the Legislature were willing to give, but they said it must be carried out for the interest of the public. It was true, they said, that in times past the company had unlimited profits, but the non-limitation of their profits had corresponding defects, as they had clearly no power to open the public streets and extend their supply. In return for the monopoly they would give them the public must be protected, and in future the profits of the company must be limited on the capital then existing to 10 per cent., and after that time, if they had more than 10 per cent., they must reduce the price of their gas for the public advantage.

The UMPIRE said that on any shares that might be issued the interest would be 7½ per cent.

Mr. MICHAEL was coming to that presently. The company said they would agree to the parliamentary terms. Their capital was £30,000, and on that capital they were willing to take 10 per cent., but on any future capital which might be raised they would take only 7½ per cent. To that Act the commissioners, it must be remembered, were parties, and there was a clause specially referring to them. The learned counsel then drew attention to the case of *Blakemore v. The Glamorganshire Canal Company*, in which it was laid down by Lord Eldon that the words of the Act of Parliament were to be taken as the contract between the parties, unless it could be shown that some mistake had arisen in the statement of the matter. The Act said that the capital should be £30,000, and therefore he contended that it was not open to his learned friend to discuss whether the capital was or was not £30,000, for it could be satisfactorily proved that there was a capital to that amount when the Act was obtained. If it were not so, what could be the meaning of the terms "existing capital" in the 17th clause? "The capital of the company shall be the existing capital." How could that exist which had no existence. There was clearly £30,000 capital fully paid-up, upon which no liability existed. His friend had said there was a distinction between paid-up capital and nominal capital, and the reason for that was obvious. If the company wished to raise any further capital there were always two modes of doing it. If they wanted £1000, they might either issue 50 shares fully paid up, or they might issue 100 shares and have only £10 paid-up. It was clear the paid-up capital was to be the amount paid up on the shares. It was different from the existing capital—the paid-up capital. The new capital might be represented by shares of which only £1000, or £2000, or £3000 might be paid-up, therefore the Act said that the amount paid up should be the amount which in reality was entitled to the 10 per cent. What, then, could be the meaning of the words "existing share capital," if they did not exactly correspond with the paid-up capital of the company, as stated in the Gas Companies Act? Therefore he maintained the company had those 1500 shares of £20 each, on which no liability existed; it was the stipulated capital when the Act was passed, and therefore he maintained beyond doubt that they were entitled to the 10 per cent. statutory dividend on that amount. It was true they had never raised that amount, and therefore they appealed to that court, and asked them to determine what should be the price to be paid in future for the public lights, in order that they might be enabled to pay their shareholders the dividend of 10 per cent. on the £30,000, which they had not yet realized.

The UMPIRE said that Mr. Michael could not contend that, supposing he were to come to the conclusion that the company could not realize the 10 per cent.—all they could legally realize—without putting on 6d. to the price of gas, and so bringing it up to 5s., the extreme limit, that he ought in his award to say so.

Mr. MICHAEL said that the company would limit themselves to 4s. 6d. Supposing they had not put this limit, it was clear the umpire could go up to 5s., or anything that was within the limit of the Act.

The UMPIRE: But I could not say that, in order to get your dividends

and reserve-fund, you should raise the price paid for the public lamps. I could not say that without I also said that you should increase the price to your private consumers.

Mr. MICHAEL said that as long as the company charged 4s. 6d. for the private consumption they would not be justified in charging a higher rate for the public lamps. They did not contend that they could charge for the public lamps a higher rate than for private ones.

The UMPIRE inquired if there was anything in the Act to that effect.

Mr. MICHAEL said it was usual to have a clause stating that the public lamps should not be charged at a higher rate than those which were charged to the private consumer. If the company could prove that 4s. 6d. would be necessary for them to pay for the cost of manufacture, to give 10 per cent. on their capital, and to allow them to put by for a reserve-fund, they would not ask for more; but there was another point on which he would remark—viz., were there any circumstances in the town of Gravesend which would call on the company to supply the public lamps at a lower rate than private consumers? They had no evidence pointing at all to such a course. On the evidence given by Mr. Hughes he would not take the trouble to comment, because it had very little effect on the matter. He (Mr. Michael) was willing to admit that there were certain advantages in supplying the public lamps, because they had one large customer, who would pay in large sums without much risk of bad debts; but the advantage of this they must remember was counteracted by having to give long credit, whilst the private consumer in most instances was obliged to pay the money down, or even in advance; so that, putting the advantages against the disadvantages, it might be said they were about equal. He maintained, therefore, there was no reason why the private consumer should pay more than the public. The company were to a certain extent trustees for the public, and if they charged the commissioners less than a fair rate they should be obliged to increase the charge to private consumers. And why should the latter be placed in a worse position than a person who did not burn gas? All parties ought to be placed on a fair and equitable basis. In times past a different system might have prevailed, but then there was a reason for it. Gas companies then had no power to take up the roads, and therefore they found it to their interest to make a loss in supplying the public lights in order that they might obtain a concession from the public authorities. Circumstances now were entirely different, and in the interest of the public as trustees it was clear that if the company advanced the interests of one class it would be at the expense of the others. In conclusion, Mr. Michael submitted that he had clearly shown that the estimate was a fair one, and that the reserve-fund, which had been placed at a moderate sum, ought to appear in it; that the company were entitled to their dividend of 10 per cent. on their capital, and that no cause had been assigned why the public lamps should be supplied at a less rate than private ones. He would ask the learned umpire to give them each then or at some future time his decision as to the question of the reserved fund and the dividend.

The UMPIRE said that he could give no decision beyond the award as to what the price of gas should be. They would see in the result probably what it was based upon. A decision on specific items of account would be of no good to any one.

Mr. MICHAEL said that if the umpire decided against him on that point he should respectfully ask him to give him a case upon it as to what was the construction of the Act with regard to the 10 per cent. dividend and capital, from which the company derived their right, as he maintained, to their reserved fund.

The UMPIRE said the case being concluded, he and the arbitrators would consult upon the terms of the award which they were called upon to give.

On the 10th of December the honourable and learned umpire made his award, which was as follows:—"I award and adjuge that the price at which the said company shall supply the public lamps of Gravesend and Milton with gas, such lamps being furnished as aforesaid, and lighted and to be so supplied every night, and kept burning at and for the time above mentioned, inclusive of all charges for lighting and extinguishing, repairing, and cleansing the said lamps, is the sum of two pounds thirteen shillings and sevenpence per lamp per annum; and I award and adjudge that the price to be paid by the said commissioners to the said company for such supply of gas, inclusive of such charge, is the sum of three pounds eight shillings per lamp per annum, the said commissioners in each case finding and providing and fixing all lamps, lamp-posts, burners, brackets, and other apparatus required; and I further award and direct that the said company do bear their own costs of and attending the reference, and do pay to the said commissioners their costs of the first meeting, held at Gravesend, on the twenty-eighth of October last; and that, save as aforesaid, the commissioners do bear their own costs of and attending the reference; and I award and direct that each party do bear and pay a moiety of the cost of the award."

Miscellaneous News.

BOMBAY GAS COMPANY, LIMITED.

A Special Meeting of this Company was held on the 16th inst., at the London Tavern—D. T. EVANS, Esq., in the chair.

The CHAIRMAN stated that the board had gone carefully into the accounts, and proposed to pay an interim dividend at the rate of 5 per cent. per annum. The company was going on prosperously. There had been a great increase in the private lights, from which they must look for profits, as the public lights were not remunerative. On the 14th of November, 1866, the number of private lights was 4842, and on the 14th of November, 1867, the number was 8675, showing an increase of 3833. The number of public lights on the 14th of November, 1866, was 1848, and on the 14th of November, 1867, 2308, showing an increase of 460. The number of public lights could be increased, but they did not pay, and so they could not increase them to any great extent. The increase in private lights during the half year had been 1143, and in public lights 140. The coal carbonized from the 1st of January to the 30th of September, 1867, was 4354 tons, producing 37,902,000 feet of gas, and yielding a revenue of £21,009. 1208 tons of coke had been sold for £3002, and the gas tar for £411. The total profit was about £13,780, including £4000 derived by the sale of two cargoes of coal. He concluded by proposing an *ad interim* dividend at the rate of 5 per cent. per annum, leaving a balance of £2280, and it was adopted *nem. con.*

The CHAIRMAN next proposed to repeal clause 107 of the Articles of Association, which restricted the inspection of the accounts to the officers of the company, which was carried unanimously; and also one empowering the board to alter the Articles of Association by inserting a clause enabling them to declare whenever they thought fit an interim dividend or bonus, and the proceedings concluded with a vote of thanks to the chairman.

MANCHESTER GAS SUPPLY.

The Gas Committee of the Manchester City Council have presented the following report:—

Revenue.

Your committee submit herewith an abstract of the accounts of this department for the year ending June 24th last, and the usual tabular statements.

Appendix A shows the amount of lamp and private rental derived from the townships within and beyond the city respectively, for the past two years.

Appendix B, the quantity of gas transmitted from the works in the daytime, and during the whole 24 hours of the day, in each month, for the years 1865-66 and 1866-67.

Appendix C, the number of meters in use on the 24th of June, 1866 and 1867.

Appendix D, the main pipes laid to the 24th of June, 1866, and those laid and taken up during the year ending the 24th of June, 1867.

Appendix E, the amount of the gross profit, and the mode of its appropriation; the amount of borrowed money owing, and the excess of assets from the year 1860 to the 24th of June last.

The rental for the past year (including meter-rents) amounts to the sum of £178,297 11s. 5d., being an increase of £9507 7s. 7d. upon that of the previous year.

The gross profit amounts to £47,323 0s. 4d., as against £52,553 2s. 11d in the previous year, and is appropriated as follows:—Payment of interest, £14,167 11s. 7d.; transferred to capital account towards liquidation of mortgage debt, £19,898 0s. 4d.; and the surplus, to be paid over for improvement purposes, £13,257 8s. 5d., as against £19,516 7s 10d. the previous year.

The number of consumers has increased 4·85 per cent., amounting now to 49,181, as against 46,907 the previous year; and the quantity of gas consumed has exceeded that of the previous year by 58,041,000 cubic feet, or 5·04 per cent., as against 89,628,000 cubic feet, or 8·37 per cent.

Your committee also submit the following reports, which they have received from Mr. John Leigh, the consulting and analytical chemist to this department, and Mr. Charles Neild, who was appointed by the council the auditor of the accounts of this department for the past year, viz:—

"To the Chairman of the Manchester Gas Committee.

"Sir,—I have the honour to report to you that the average illuminating power of the Manchester gas during the past year has been equal to 20·58 sperm candles, consuming at the rate of 120 grains per hour, the consumption of the gas having been reduced to a constant standard of 5 cubic feet per hour. The photometric observations have been made at the Gaythorn gas station, Hulme, and at the Rochdale Road station.

"The illuminating power has been a little lower—in fact, about one candle lower—than in the preceding year, when it averaged 21·6 candles.

"The gas has been tested daily for sulphuretted hydrogen, and has been also continuously led through test solutions, for the detection of this impurity and of ammonia. On very rare occasions have any traces of sulphuretted hydrogen been obtained, and the quantity of ammonia in the gas has been very small. The gas has also been very free from naphthaline and from tar, which I attribute to the continued copious washing the gas has received.—I have, &c., "JOHN LEIGH, M.R.C.S.L.

"*Whalley Range, Manchester, Aug.* 28, 1867."

"24, *Brown Street, Manchester, Aug.* 29, 1867.

"To the Gas Committee of the Manchester Corporation.

"Gentlemen,—I beg to report my audit of your books and accounts for the year ending June 24, 1867.

"The audit consisted of the examination of the bank pass-books, the collectors and other statements of cash received, with the entries in the cash-book; the examination of the Finance Committee's authorities for payments, and the vouchers for the same; also the checking of all the postings from the cash-book, journal, and invoice-book, to the personal and impersonal ledgers, and to the capital ledger.

"I have compared the list of mortgage loans, also the cancelled bonds, with the town-clerk's register, I have examined the profit and loss account, statement of receipts and expenditure on capital and revenue accounts, statement of assets and liabilities, and the general balance-sheet, and have certified the correctness of the whole.—I have, &c., "CHARLES NEILD, Auditor."

Capital Account.

The expenditure on capital account during the past year has amounted to £29,324 16s. 7d., particulars of which are given in the statement of assets and liabilities.

At the Gaythorn station your committee are proceeding with the completion of the internal fittings of the new retort-house, the erection of a new purifying-house, engine-house, and new washers in connexion therewith; also new smithy and workshops, and the covering over of the 52-feet diameter tar and ammonia water tank. These buildings, and the machinery and apparatus required in connexion therewith, together with an additional gasholder, which it is proposed to erect on the site of the old retort-house and other buildings near the River Street entrance, will complete the arrangements contemplated at this station.

Your committee have entered into contracts for the erection at the Rochdale Road station of two new retort-houses, an additional cannel-shed, purifying-house, and revivifying-shed, and new suite of offices on the site of the original works and foundry, which have for some time been in a very dilapidated condition; also a new smithy and workshops on land forming part of the new portion of the station adjoining Lower Tebbutt Street.

Your committee have been enabled to make these arrangements without purchasing any additional property for the enlargement of the station; but in order to enable them to provide hereafter the requisite additional gasholder accommodation in connexion with these works, and in as convenient a situation as possible, your committee have secured upon satisfactory terms a plot of land situate in Portland Street, Newtown.

The extensions in the street-mains department during the past year have again been necessarily considerable. A 16-inch main, supplied from the Medlock Street 30-inch main, has been laid in Stretford Road, from Higher Cambridge Street to Chorlton Road; from thence a 14-inch and 12-inch to Withington Road, Moss Side, and an 11-inch in Whalley Street, and 10-inch in Upper Chorlton Road. These mains were found necessary to meet the increased demand for gas in that locality, and to remedy the numerous complaints which had been received of deficient supply. A 14-inch main has also been laid in Ashton Old Road, commencing at Pinmill Brow, in the township of Ardwick; and a 13-inch, 12-inch, and 11-inch in Gorton Lane and Gorton Old Road, for the supply of the several large works and other property in that district. A 12-inch and an 11-inch main have also been laid in Queen's Road, from Oldham Road to Rochdale Road, as a trunk main for the supply of the numerous side streets and the lamps in that neighbourhood; and an 18-inch has been laid along Piccadilly, for the purpose of improving the supply in Portland Street and London Road.

In addition to the foregoing, two additional outlet-mains have been laid from the Rochdale Road station, each of 30-inches diameter, and are now being extended, one towards Newton Heath, *viâ* Oldham Road, and the other towards Jersey Street and Pollard Street, from both of which districts complaints were received of deficient supply during the last winter.

Every Street Station.

Having purchased the plot of land in Portland Street, Newtown, on which to erect the additional gasholder that will be required in connexion with the Rochdale Road station, your committee have sold to the trustees of the Ancoats Independent Chapel, for the sum of £3000, the plot of land in Every Street, formerly occupied as a gasholder station. On behalf of the Gas Committee,

THOS. D. CREWDSON, Chairman.

Gas Offices, York Chambers, King Street, Aug. 30, 1867.

Dr. *Profit and Loss Account, for the Year ending June 24, 1867.* *Cr.*

To Cannel				£90,761	6	3	
Retort men's wages				16,669	16	11	
Retorts, materials, and setting				7,103	6	10	
Purifying charges				3,063	15	2	
Labourers wages, and repairs, &c., of works—							
Gaythorn station	£3,811	11	11				
Rochdale Road station	4,707	16	0				
Street-mains	5,129	8	4				
				13,648	16	3	
Salaries—							
Thomas Peacock, in-door superintendent	£ 500	0	0				
John R. Macfarlane, manager, Gaythorn station	500	0	0				
Henry Lyon, manager, Rochdale Road station	366	13	4				
John Leigh, consulting chemist	250	0	0				
Thomas Rafferty, surveyor of street-mains	315	0	0				
Jonas Croft, chief clerk	300	0	0				
John Bardsley, chief meter inspector	252	0	0				
James Lee, clerk in rental-office	126	0	0				
Charles Headen, draughtsman, street-mains	121	1	6				
John Cocker, clerk in rental office	120	0	0				
Thomas C. Lever, inspector of fittings	96	0	0				
Charles Dobbs, ditto	96	0	0				
William Richardson, clerk and collector of miscellaneous accounts (portion of year)	75	0	0				
George F. Bateman, clerk and collector of miscellaneous accounts (portion of year)	25	0	0				
City surveyor (portion of salary)	100	0	0				
City treasurer (ditto)	100	0	0				
Wages of meter inspectors and assistants in rental and inquiry offices, at 32s. per week and under	3,049	18	5				
				6,392	13	3	
Collectors salaries, &c.—							
John Ashcroft	£280	3	2				
John T. Banks	260	0	0				
Charles Nickson	240	19	6				
James Whittaker	210	0	0				
William A. Nield	191	3	8				
Oswald Turner	170	0	0				
William Stubbs	160	0	0				
Thomas E. Harley	152	19	6				
Samuel Robinson	150	0	0				
Jabez Ashworth	150	0	0				
Charles Westoby	150	0	0				
James Warrington	152	15	9				
Richard G. Walker	150	0	0				
George F. Bateman	101	5	0				
James Shaw, receiver of rentals paid in the office	252	0	0				
John Hall, poundage on broken period rentals	25	5	8				
George Whittaker, ditto	7	14	4				
Collection of arrears—							
George F. Bateman	20	2	3				
J. Lee and J. Cocker	1	16	11				
William Richardson	5	11	4				
				2,831	17	1	
Chief and other rents, rates, and taxes—							
Chief rents	£ 312	16	8				
Rates, rents, and taxes on offices, and on arches used as stores	478	2	7				
Rates on stations and street-mains	3,308	6	6				
				4,099	5	9	
Income-tax				897	5	0	
Amount transferred to capital for depreciation of works—							
Gaythorn station—							
4 per cent. on buildings (£73,169 11s. 6d.)	£2,926	15	7				
5 per cent. on apparatus (£27,646 1s. 7d.)	1,382	6	0				
				£4,309	1	7	
Rochdale Road station—							
4 per cent. on buildings (£64,799 19s. 6d.)	£2,591	19	11				
5 per cent. on apparatus (£37,908 0s. 7d.)	1,895	8	0				
				4,487	7	11	
Every Street station—							
4 per cent. on buildings (£44 13s. 2d.)				1	15	8	
Street-mains store (Poland Street)—							
4 per cent. on buildings (£2101 0s.)	£84	1	0				
5 per cent. on apparatus (£578 3s. 7d.)	28	18	1				
				112	19	1	
Street-mains—							
2½ per cent. on main-pipes (£184,429 6s. 10d.)				4,610	14	8	
Hired meters and fittings—							
10 per cent. on £10,900 12s. 11d.				1,090	1	3	
Meter-proving apparatus—							
10 per cent. on £164 3s. 5d.				16	8	4	
				14,628	8	6	
Stationery and advertising				469	17	1	
Law stationery, receipt, postage, and deed stamps, &c.				192	15	10	
Clothing for inspectors, &c.				191	15	2	
Subscriptions to Infirmary, Eye Hospital, Steam Boiler Association, &c.				76	15	0	
Miscellaneous expenses				351	10	2	
Commission, &c., charged by bankers				451	9	6	
Bad debts and allowances				1,085	8	10	
Balance carried down				47,323	0	4	
				£210,239	2	11	

By Gas-rental—							
Within the city—							
Private consumers	£135,762	7	3				
Meter-rents	1,446	15	7				
Public lamps	8,859	9	7				
				£146,068	12	5	
Beyond the city—							
Private consumers	£29,528	7	11				
Meter-rents	277	9	4				
Public lamps	2,423	1	9				
				32,229	19	0	
				£178,297	11	5	
Coke, tar, and ammonia water				31,941	11	6	
				£210,239	2	11	

To Interest on loans, &c. (less income-tax)				£14,167	11	7	
Amount transferred to capital account towards liquidation of mortgage debt				19,898	0	4	
Surplus payable to the improvement department				13,257	8	5	
				£47,323	0	4	

By Balance brought down, being gross profit on the year's working				£47,323	0	4	
				£47,323	0	4	

Dr. *General Summary of Receipts and Expenditure on Capital and Revenue Account, June 24, 1867.* *Cr.*

To Balance in the bank, June 24, 1866			£23,875	17	4		
Ditto owing to the bank, June 24, 1867			1,860	12	4		
Ditto in the treasurer's hands, June 24, 1866			147	4	6		
Ditto of sums owing to and by the committee, including stocks on hand, June 24, 1866			42,398	6	4		
						£68,282	0 6
Balance of profit and loss account, June 24, 1867, as per statement			13,257	8	5		
Loans received			18,893	6	8		
Materials, &c., sold (capital account) as per statement—							
Rochdale Road station			46	4	0		
Amount transferred from revenue account—							
For depreciation of works			14,628	8	6		
For liquidation of mortgage debt			19,898	0	4		
						£135,005	8 5

By Loans repaid						£34,640	0 0
Improvement and Chorlton-upon-Medlock Committees—							
Surplus for the year ending June 24, 1866						19,516	7 10
Expenditure on capital account, viz.:—							
Gaythorn station	£9,111	13	0				
Rochdale Road ditto	1,829	3	1				
Street-mains store	9	7	3				
Street-mains	14,105	0	7				
Service-pipes	1,045	15	9				
Hired meters	3,223	16	11				
						29,324	16 7
Balance in the treasurer's hands, June 24, 1867						62	19 10
Ditto of sums owing to and by the committee, including stocks on hand, June 24, 1867						51,461	4 2
						£135,005	8 5

Statement of Assets and Liabilities, June 24, 1867.

PERMANENT ASSETS.

Lower King Street station—							
Land (now let to the Watch Committee, at an annual rent of £300)						£7,500	0 0
Gaythorn station—							
Land, buildings, and apparatus, as per last report—							
Land	£55,435	6	10				
Buildings	73,169	11	6				
Apparatus	27,646	1	7				
				£156,250	19	11	
Less—							
Depreciation				4,309	1	7	
				£151,941	18	4	
One year's outlay to June 24, 1867—							
Yard-mains	£ 480	10	7				
New purifying-house	241	2	4				
New exhauster	523	16	4				
New lime-shed	159	7	1				
New revivifying-shed	379	0	8				
New weighing-machine	67	0	0				
New workshops	560	12	9				
New cannel-stores, retort-house, &c.	4,829	8	0				
New meter and governor house	236	1	2				
New offices and boundary-walls	1,508	10	8				
Covering over river	126	3	5				
				9,111	13	0	
						161,053	11 4
Rochdale Road station—							
Land, buildings, and apparatus, as per last report—							
Land	£20,755	17	5				
Buildings	64,799	19	6				
Apparatus	37,908	0	7				
				£123,463	17	6	
Less—							
Materials sold, &c.	£ 46	4	0				
Depreciation	4,487	7	11				
				4,533	11	11	
				£118,930	5	7	
One year's outlay to June 24, 1867—							
Yard-mains	£287	2	7				
Alteration of purifiers	540	12	3				
New exhauster	461	16	6				
New station-meter	539	11	9				
				1,829	3	1	
						120,759	8 8
Every Street station—							
Land and buildings, as per last report—							
Land	£3,090	1	0				
Buildings	44	13	2				
				£3,134	14	2	
Less—							
Depreciation				1	15	8	
						3,132	18 6
Street-mains store (Poland Street)—							
Land, buildings, and apparatus, as per last report—							
Land	£1,406	0	0				
Buildings	2,101	6	0				
Apparatus	578	3	7				
				£4,085	9	7	
Less—							
Depreciation				112	19	1	
				£3,972	10	6	
One year's outlay to June 24, 1867—							
Buildings				9	7	3	
						3,981	17 9
Street-mains—							
Main-pipes, as per last report	£184,429	6	10				
Less—							
Depreciation	4,610	14	8				
				£179,818	12	2	
One year's outlay to June 24, 1867				14,105	0	7	
						193,923	12 9
Service-pipes—							
Service-pipes laid, as per last report				£12,770	4	0	
Moiety of year's outlay charged to capital account				1,045	15	9	
						13,815	19 9
Hired meters, &c.—							
Outlay, as per last report	£10,900	12	11				
Less—							
Depreciation	1,090	1	3				
				£9,810	11	8	
One year's outlay to June 24, 1867				3,223	16	11	
						13,034	8 7
Meter-proving apparatus—							
Outlay, as per last report				£164	3	5	
Less—							
Depreciation				16	8	4	
						147	15 1
Total amount of permanent assets						£517,349	12 5

FLOATING ASSETS.

Cannel, retorts, and other materials on hand—							
Revenue account				£35,953	8	3	
Gas-rents, and sundry accounts due to the committee—							
Revenue account				38,054	15	11	
Extension account				131	10	8	
						74,139	14 10
Balance in the treasurer's hands						62	19 10
						£591,552	7 1
Excess of assets, June 24, 1867						£220,380	6 1
Excess of assets, June 24, 1866						200,382	5 9
Increase, being the amount charged upon the profit for the past year towards liquidation of the mortgage debt, and carried to capital account						£19,898	0 4

LIABILITIES.

Mortgage debt—							
Act of 1844—1st charge	£ 77,666	0	9				
Ditto—2nd ditto	60,881	5	0				
Ditto of 1853	400	0	0				
Ditto of 1854	47,760	0	0				
Ditto of 1858	125,960	2	4				
Total amount secured by mortgage				£312,667	8	1	
Sums advanced, not secured by mortgage at this date—							
Indian Relief-Fund Committee	£6,500	0	0				
Admiral Duff's Charity	1,058	1	6				
Highways Committee	10,000	0	0				
Thomas Hill	1,500	0	0				
				19,058	1	6	
						£331,725	9 7
Purchase of land, the purchase-money being left in the hands of the corporation at interest						1,750	0 0
Sundry accounts owing—revenue account				£15,705	1	9	
Ditto ditto—extension account				3,443	7	11	
						19,148	9 8
Deposits in hand						3,530	1 0
Balance owing to the bank						1,860	12 4
						£358,014	12 7
Surplus for the year ending June 24, 1867, payable to the improvement department						13,257	8 5
Balance, being excess of assets						220,380	6 1
						£591,552	7 1

[Appendix A.]

Statement of the Lamp and Private Rental (including Meter-Rents) derived from the Townships within and beyond the City respectively, for the Years 1865-6 *and* 1866-7.

	Half Year ending Dec. 25, 1865.			Half Year ending June 24, 1866.			Total for the Year 1865-6.			Half Year ending Dec. 25, 1866.			Half Year ending June 24, 1867.			Total for the Year 1866-7.		
Within the city.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Township of Manchester—																		
Private rental	35815	5	8	43480	19	2				41026	15	11	43528	18	6			
Public lamps	2536	2	1	2290	18	7				2594	19	6	2383	10	6			
	41051	8	7	45789	17	9	86841	6	4	43621	15	5	45912	9	0	89534	4	5
Other townships—																		
Private rental	23350	2	1	25643	18	3				25593	19	7	27059	8	10			
Public lamps	1920	6	6	1927	15	0				1935	14	11	1945	4	8			
	25270	8	7	27571	13	3	52842	1	10	27529	14	6	29004	13	6	56534	8	0
Total within the city	66321	17	2	73361	11	0	139683	8	2	71151	9	11	74917	2	6	146068	12	5
Beyond the city.																		
Private rental	12691	10	11	14300	13	10				15167	8	0	14638	9	3			
Public lamps	1016	16	4	1097	14	7				1199	1	5	1224	0	4			
	13708	7	3	15398	8	5	29106	15	8	16366	9	5	15862	9	7	32228	19	0
Gross rental	80030	4	5	88759	19	5	168790	3	10	87517	19	4	91779	12	1	178297	11	5

	Within the City.	Beyond the City.	Total.
Gross rental, 1865-66	£139,683 8 2	£29,106 15 8	£168,790 3 10
Ditto, 1866-67	146,068 12 5	32,228 19 0	178,297 11 5
	Increase. £6,385 4 3	Increase. £3,122 3 4	Increase. £9,507 7 7

[Appendix B.]

Comparative Statement of the Quantity of Gas transmitted from the Works, in the Day-time and during the Twenty-four Hours, for the Years 1865-6 *and* 1866-7.

	Day-time.			Twenty-four Hours.		
	1865-66.	1866-67.	Inc. or Dec.	1865-66.	1866-67.	Inc. or Dec.
			Per cent.			Per cent.
July	8,602,000	9,223,000	7·21 Inc.	42,280,000	47,231,000	11·71 Inc.
August	9,895,000	11,555,000	16·77 ,,	55,578,000	61,422,000	10·51 ,,
September	10,007,000	13,673,000	36·63 ,,	71,112,000	80,577,000	13·30 ,,
October	14,432,000	23,284,000	61·32 ,,	110,545,000	122,317,000	10·64 ,,
November	20,951,000	22,742,000	8·58 ,,	143,157,000	143,977,000	·57 ,,
December	25,127,000	27,383,000	8·98 ,,	158,204,000	168,170,000	6·29 ,,
January	24,913,000	32,256,000	29·47 ,,	155,598,000	170,934,000	9·85 ,,
February	19,774,000	18,728,000	5·29 Dec.	130,544,000	126,147,000	3·36 Dec.
March	19,330,000	19,050,000	1·44 ,,	112,443,000	110,593,000	1·67 ,,
April	14,001,000	15,206,000	8·57 Inc.	76,288,000	78,314,000	2·65 Inc.
May	11,327,000	12,918,000	14·04 ,,	59,358,000	60,794,000	2·41 ,,
June	9,757,000	10,761,000	10·29 ,,	44,761,000	47,433,000	5·96 ,,
Total	188,116,000	216,788,000	15·24 Inc.	1,159,868,000	1,217,909,000	5·00 Inc.

[Appendix C.]

Table showing the Number of each Size of Meter in use on the 24th of June, 1866 *and* 1867, *including those on Hire.*

Size of Meter.	Townships within the City.														Townships beyond the City.		Total.		Increase.	Decrease.
	Manchester.		Chorlton-upon-Medlock.		Hulme.		Ardwick.		Beswick.		Cheetham.		Total within the City.							
	1866.	1867.	1866.	1867.	1866.	1867.	1866.	1867.	1866.	1867.	1866.	1867.	1866.	1867.	1866.	1867.	1866.	1867.		
1 light	117	111	25	36	47	48	18	21	4	4	4	5	215	225	11	9	226	234	8	..
2 lights	8783	9277	2877	3057	5484	5750	1911	1981	454	527	1515	1538	21024	22130	4278	4615	25302	26745	1443	..
3 ,,	4585	4484	1809	1900	2010	2042	568	592	53	61	975	1027	10060	10106	1663	1787	11663	11893	230	..
5 ,,	2337	2366	980	1044	464	485	211	221	22	24	507	531	4521	4671	1032	1140	5553	5811	258	..
10 ,,	1235	1285	277	302	124	136	63	68	11	13	134	163	1844	1967	375	441	2219	2408	189	..
20 ,,	613	632	66	75	32	36	29	33	6	6	33	45	779	827	156	165	935	992	57	..
30 ,,	228	264	16	21	14	15	7	6	3	6	18	23	286	335	54	55	340	390	50	..
45 ,,	61	55	4	4	4	4	3	4	..	..	..	..	72	67	8	8	80	75	..	5
50 ,,	97	110	12	12	5	7	6	6	3	4	5	5	128	144	29	34	157	178	21	..
60 ,,	76	74	8	9	7	11	2	2	1	..	2	3	96	99	9	13	105	112	7	..
80 ,,	56	60	5	6	4	4	2	2	1	1	..	..	68	73	7	8	75	81	6	..
100 ,,	116	110	9	10	6	7	5	5	1	2	5	6	142	140	25	24	167	164	..	..
150 ,,	33	29	4	6	5	5	1	2	..	..	1	1	44	43	6	9	50	52	2	..
200 ,,	5	11	..	..	2	2	..	..	..	2	3	3	10	18	4	5	14	23	9	3
250 ,,	1	3	..	..	..	..	..	..	1	..	..	..	2	3	..	0	2	3	1	..
300 ,,	9	13	1	1	1	1	..	..	1	1	1	1	13	17	5	5	18	22	4	..
500 ,,	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1	..	..
Total	18352	18884	6093	6483	8209	8553	2826	2943	561	651	3203	3351	39244	40865	6786	8319	46907	49184	2285	8
																			Deduct decrease	8
																			Net increase = 4·85 per cent.	2277

Statement showing the Number and Sizes of Meters on Hire on June 24, 1867 (*included in the above Table*).

	1 Light.	2 Lights.	3 Lights.	5 Lights.	10 Lights.	20 Lights.	30 Lights.	50 Lights.	60 Lights.	80 Lights.	150 Lights.	200 Lights.	Total, 1867.	Total, 1866.	Increase.
Within the city	225	5726	1140	389	72	13	6	2	1	1	1	..	7576	6241	1335
Beyond the city	9	921	294	72	13	1	1	..	..	..	..	..	1311	1163	148
Total	234	6647	1434	461	85	14	7	2	1	1	1	..	8887	7404	1483

[Appendix D.]

Pipes Laid and Taken up during the Year ending June 24, 1867.

Laid.	Diam. 2 in.	Diam. 3 in.	Diam. 4 in.	Diam. 5 in.	Diam. 6 in.	Diam. 8 in.	Diam. 9 in.	Diam. 10 in.	Diam. 11 in.	Diam. 12 in.	Diam. 13 in.	Diam. 14 in.	Diam. 15 in.	Diam. 16 in.	Diam. 18 in.	Diam. 30 in.	Total Length.
Within the city—	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.
Manchester	3168	717	1613	46	1078	860	139	..	185	1217	..	..	..	..	120	301	9444
Chorl.up.Medlock	1032	..	..	..	..	..	284	..	..	..	..	..	..	55	..	..	1371
Hulme	778	..	..	..	354	..	1025	..	..	..	..	360	4	1274	..	..	3795
Cheetham	54	117	..	..	..	..	..	..	..	..	..	..	..	..	..	..	171
Ardwick and Bes.	377	..	..	..	..	..	..	..	..	600	225	..	..	..	..	..	1202
	5409	834	1613	46	1432	860	1448	..	185	1817	225	360	4	1329	120	301	15983
Beyond the city.	5684	640	5374	238	4218	317	141	275	1808	1561	..	720	..	..	..	..	20976
Total.	11093	1474	6987	284	5650	1177	1589	275	1993	3378	225	1080	4	1329	120	301	36959
Taken up.																	
Within the city.	1632	2958	519	464	596	672	..	..	..	337	..	112	..	..	..	..	7290
Beyond the city	950	1398	455	..	745	..	..	..	..	..	..	..	..	..	..	..	3548
Total	2582	4356	974	464	1341	672	..	..	..	337	..	112	..	..	..	..	10838
																	Net increase during the year 26121 yds.

Summary.

Pipes laid up to June 24, 1866—	Diam. 2 in.	Diam. 3 in.	Diam. 4 in.	Diam. 5 in.	Diam. 6 in.	Diam. 7 in.	Diam. 8 in.	Diam. 9 in.	Diam. 10 in.	Diam. 11 in.	Diam. 12 in.	Diam. 13 in.	Diam. 14 in.	Diam. 15 in.	Diam. 16 in.	Diam. 18 in.	Diam. 20 in.	Diam. 22 in.	Diam. 24 in.	Diam. 30 in.	Total Length
	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.	Yds.
Within the city . . .	151248	115731	38097	15868	23414	756	13943	12203	1241	168	20830	84	6943	5634	1064	3236	388	477	6389	832	418546
Beyond the city . . .	57674	37074	28361	6079	15541	410	19339	10604	329	..	15262	..	17	37	..	682	..	..	315	..	191744
Pipes laid during the year ending June 24, 1867—	208922	152805	66458	21947	38955	1166	33282	22807	1570	168	36092	84	6960	5671	1064	3918	388	477	6704	832	610270
Within the city . . .	5409	834	1613	46	1432	..	860	1448	..	185	1817	225	360	4	1325	120	..	..	..	301	15083
Beyond the city . . .	5684	640	5374	238	4218	..	317	141	275	1808	1561	..	720	..	..	..	..	..	..	..	20976
	220015	154279	73445	22231	44605	1166	34459	24396	1845	2161	39470	319	8049	5675	2393	4038	388	477	6704	1133	647229
Deduct taken up . .	2382	4356	974	464	1341	..	672	..	..	..	337	..	112	..	..	..	..	..	..	..	10838
Net total	217423	149923	72471	21767	43264	1166	33787	24396	1845	2161	39133	319	7928	5675	2393	4038	388	477	6704	1133	636391*

* Total, 636,391 yards, or 361½ miles and 151 yards.

[Appendix E.]

Statement showing the Amount of Gross Profit, and the Mode of its Appropriation; also the Amount of Borrowed Money Owing, and the Excess of Assets, &c., from the Year 1860 to the present Date.

Year ending June 24.	Gross Profit.	Maximum Price of Gas, per 1000 Feet, within the City.	Appropriation of Gross Profit. Interest.	Liquidation of Mortgage Debt.	Surplus.	Appropriation of Surplus. Improvement Purposes.	Water-Works Committee.	Borrowed Money Owing.	Amount charged to Revenue in respect of Depreciation of Works and Mains.	Excess of Assets.
	£ s. d.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1860. .	64779 14 10	Half year . . 5 0 „ . . 4 6	16255 12 4	13306 5 6	35217 17 0	17608 18 6	17608 18 6	366175 8 4	5000 0 0	88280 7 2
1861. .	51825 0 1	Half year . . 4 6 „ . . 4 0	16098 5 3	18980 3 0	16746 11 10	8373 5 11	8373 5 11	379603 0 8	11372 5 0	107260 10 2
1862. .	42667 7 1	. . . . . 4 0	15482 3 2	19330 14 4	7854 9 7	7854 9 7	....	382539 7 10	12179 4 11	126591 4 6
1863. .	55804 12 9	Half year . . 4 0 „ . . 3 9	14932 17 8	18609 17 4	22261 17 9	22261 17 9	....	362877 8 10	12666 18 11	145201 1 10
1864. .	59545 18 9	Half year . . 3 9 „ . . 3 6	13888 12 10	17810 1 0	27847 4 11	27847 4 11	....	335808 16 9	12690 12 9	163011 2 10
1865. .	56432 4 5	Half year . . 3 6 „ . . 3 2	13086 10 9	17587 0 11	25758 12 9	25758 12 9	....	306931 2 2	13050 6 6	180598 3 9
1866. .	52553 2 10	. . . . . 3 2	13252 13 0	19784 2 0	19516 7 10	19516 7 10	....	347472 2 11	13817 2 9	200382 5 9
1867. .	47323 0 4	. . . . . 3 2	14167 11 7	19898 0 4	13257 8 5	13257 8 5	....	331725 9 7	14628 8 6	220280 6 1
Total.	430931 1 1		117164 6 7	145306 4 5	168460 10 1	142478 5 1	25982 4 5		95404 19 4	

Dr. Whitmore's Report on the Quality of the Gas supplied in St. Marylebone, in November, 1867:—

November.	Illuminating Power in Sperm Candles. *Mean of 26 Observations.	Highest.	Lowest.	Mean Pressure in 10ths of an inch. Highest.	Lowest.
Imperial Company's gas	15·19	15·87	14·60	22·50	9·31
Chartered Co.'s common gas . .	12·68	14·20	12·45	37·08	13·88
Chartered Co.'s cannel gas . . .	21·21	22·72	20·08	30·18	12·47

* Each observation consists of 10 readings of the photometer.

The mean illuminating power of the Imperial Company's gas during the month, was equal to rather more than 15 candles, or 25 per cent. in excess of the standard, and, as a proof of its general excellence in this respect, it may be stated that, of all the 26 observations made at different periods of each day, it was never once found below 14½ candles. Its pressure was also steady and good. The mean of three testings for sulphur showed a slight excess of this impurity (20·49 grs.). The test-paper also showed the presence of some ammonia, but no sulphuretted hydrogen. The mean light of the common gas of the Chartered Company was equal to that of 13 candles, or 8 per cent. above the legal standard; once it was over 14 candles, and on no occasion did it fall below about 12½ candles. Its pressure was also steady, and sometimes very high. The mean of three careful testings for sulphur made on the 8th, 19th, and 26th of the month, gave 28·14 grains in every 100 cubic feet of gas, being 8·14 grains in excess of what is permitted by law. I have called the attention of the secretary of the company to this large excess of a very noxious and unwholesome impurity, from whom I have received the assurance that the matter shall have immediate attention. Traces of ammonia were constantly found, but the presence of sulphuretted hydrogen was never once detected. The cannel gas of the same company was in its illuminating power equal to the light of 21·21 candles, or 6 per cent. above the standard; on five occasions it was over 22 candles. In this gas also an excess of sulphur was found (21·78 grs.). Its pressure was uniformly good. The above results were obtained from the gas of the Imperial Company, manufactured at their Fulham works, and from the common and cannel gas of the Chartered Company, manufactured at their works in the Horseferry Road, Westminster.

Dr. Whitmore's Report on the Quality of the Water supplied in St. Marylebone, in November, 1867:—

November.	Total Solid Matter in degrees or grains per Imperial gallon. Nov., 1866. 0°	Nov., 1867. 0°	* Loss by Incineration of Solid Matter in previous column. Nov., 1866. 0°	Nov., 1867. 0°	Ammonia. 0°
Distilled Water . . .					
West Middlesex water	20·80	19·68	0·90	0·68	—
Grand Junction water	21·52	19·96	1·03	0·64	—

* The loss by incineration represents the amount of organic and other volatile matters contained in an Imperial gallon (70,000 grains) of water.

As compared with the water supplied by the above companies during the month of October, we find in the supply of last month a considerable increase of mineral, and some little increase also of organic impurity. The former adds to its hardness, and, for purposes of cleanliness, renders more soap necessary. The increase of organic impurity may be accounted for by the circumstance that, as the growth of vegetation in the bed of the river is during the cold weather partly suspended, or at least much less active, the water is necessarily less perfectly purified from its sewer contamination; but the impurity in this respect is still so small as to be altogether unimportant. The water of both companies, when drawn from the mains, was perfectly bright and transparent; no amount of filtration could render it more so.

Bursting of Water-Pipes.—A correspondent of the *Times* makes the following excellent suggestion for preventing accidents from this cause. He says: "Many of your readers have no doubt cause to remember the sad havoc made by the sudden thaws of the previous winter. Numbers of handsomely decorated rooms have been spoilt, and walls and ceilings defaced through the bursting of water-pipes, which are necessarily laid to various rooms in our houses. The sudden thaw has already commenced its work of destruction, and doubtless there are some who have used no check against these burstings of pipes and emptyings of reservoirs. The plumber is too busy to attend immediately to all the calls made upon him to repair the water-pipes after every thaw, so that many families are often compelled to be without water for several days. In order that water may be obtained in our upper apartments, the cisterns are generally to be found built in the roof or topmost part of the house, and the pipes branching from them are often fixed in the coldest corner, and not unfrequently to the outer wall; the water in them becomes frozen, and expands to such an extent as to burst the stoutest lead or iron pipes; and stop-taps are not free from its force, and are often the first to yield. I would advise your readers to send for a plumber at once, that he may fix a valve at the bottom of the cistern, over the outlet-pipe, with a small wire cord attached, and conveyed through a tube fixed in the cistern to the most convenient place below, so that, the water becoming frozen, the action of the valve is not impeded; the danger then is at an end. For three-quarters of the year the valve will not be required, but, when the frost sets in, and especially at night, let the valve drop, and the water in the cistern will not be allowed to enter the pipes. The lowest tap being opened, the pipes will soon become empty, and therefore quite safe; water may at any time be obtained by a slight pull at the end of the cord, and securing it to a small hook fixed in the wall. A few shillings outlay before the next frost will ensure a house from damage that would cost many pounds to repair, besides the inconvenience caused to its inhabitants."

Hornsey.—The following tenders were sent in for the construction of a brick tank, 92 feet in diameter and 30 feet deep, with a dry well 8 feet in diameter and 32 feet deep; and a telescopic gasholder, 90 feet in diameter, each lift being 30 feet deep, for the Hornsey Gas Company, on designs furnished by Mr. Jabez Church:—

Tank.

Kirk	£4860 0s.
Mansfield	4570 0
Ashley and Horner	4490 0
Hill and Keddall (accepted) . . .	4260 0

Gasholder.

Cutler and Son	£4484 10s.
Piggott and Son	4450 0
J. and W. Horton (accepted) . . .	4175 0

Share List of Metropolitan Gas Companies.

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum	Price per Share.
	£		£ s d	£ s d	£ s d
8000	10	Anglo-Romano . .	10 0 0	9 0 0	11 to 12
5000	20	Bahia (Limited) . .	20 0 0	nil.	
1000	20	Do., preference .	20 0 0	10 0 0	27 10 0
750	20	Do., do., redeem.	10 0 0	10 0 0	12 10 0
40000	5	Bombay (Limited).	5 0 0	5 0 0	4⅝ to 4¾
10000	5	Do., third issue .	3 0 0	5 0 0	2¼ to 2⅜
10000	20	British, Limited . (Norwich, Hull-Sculcoates, Hanley, Tunstall & Shelton (Potteries), Trowbridge, & Holywell.)	20 0 0	6 0 0	28 to 29
12000	50	*Chartered*	50 0 0	6 10 0	46 0 0
6000	50	Do.	40 0 0	6 10 0	34 0 0
10000	20	*City of London*, A shares	20 0 0	9 0 0	22 to 24
10000	10	Do., B shares	10 6 0	4 9 0	6½ to 7
9629	10	Do., new shares.	10 0 0	9 0 0	11 to 12
25000	25	City of Moscow (L)	25 0 0		10 to 11
17490	25	*Commercial* . . .	25 0 0	10 0 0	32 to 33
20000	20	Continental Union.	20 0 0	4 0 0	13 to 14
10000	20	Do., preference .	20 0 0	7 0 0	
5827	5	County & General (Limited) . .	5 0 0	nil.	
2000	5	Do., preference . (Pater, Pembroke, Ely, Lea Bridge, Northfleet, Walton, & Ware.)	5 0 0	nil.	
5000	10	*Crystal Pal. Dist.*	10 0 0	10 0 0	13½ to 14
5000	10	Do., preference .	10 0 0	6 0 0	12½ to 13
10000	10	Do., new shares .	2 10 0	7 0 0	2½ to 3
4000	50	*Equitable*	50 0 0	10 0 0	64 to 65
4000	25	Do., new shares.	25 0 0	10 0 0	32½ to 33
23406	10	European (Lim.) .	10 0 0	10 0 0	12½ to 13¼
12000	10	Do., new shares. Boulogne, Amiens, Rouen, Caen, Havre, & Nantes.)	5 0 0	10 0 0	7 to 7¼
20000	10	*Gt. Cent. Gaz Cons.*	10 0 0	10 0 0	12¼ to 12⅝
5000	10	Hong Kong (Lim.)	10 0 0	5 0 0	8 to 10
26000	50	*Imperial*	50 0 0	10 0 0	64 to 65
1300	100	Do., bonds . . .	£100	10 0 0	170 to 175
2391	25	Imperial Austrian.	25 0 0	nil.	
28000	50	*Impl. Continental* (Amsterdam, Berlin, Ghent, Hanover, Lille, Rotterdam, Aix-la-Chapelle, Antwp., Bordeaux, Brussels, Cologne, Frankfort-on-M., Haarlem, Stolberg, Toulouse, & Vienna	43 15 0	16 0 0	92¼ to 93½
400	100	Impl. Mexican (L.)	100 0 0	nil.	
200	100	Do., new	100 0 0	nil.	
3000	40	*Independent* . . .	40 0 0	10 0 0	50 to 53
3000	10	Do.	10 0 0	5 0 0	7 to 9
3000	20	Do.	12 10 0	7 10 0	13 to 14
7133	50	*London*	50 0 0	10 0 0	62 to 63
5610	25	Do., 1st pref. .	25 0 0	6 0 0	25 to 26
503	50	Do., 2nd pref. .	50 0 0	6 0 0	
214	50	Do., 3rd pref. .	50 0 0	6 0 0	
18781		Do., 1st pref. sk		6 0 0	
118281		Do., 2nd pref. sk		5 0 0	
12000	5	Malta & Medit. (L.)	5 0 0	4 0 0	3¼ to 4
6000	5	Do., preference .	5 0 0	7 0 0	5 0 0
30000	5	Oriental, Calcutta	5 0 0	9 0 0	5⅞ to 6⅛
30000	5	Do., new shares.	1 0 0	9 0 0	1⅛ to 1⅛
10000	5	Ottoman (Limited)	5 0 0	nil.	1⅜ to 2¼
10000	10	Pará (Limited) . .	10 0 0	6 0 0	8½ to 9
27000	20	*Phœnix*	20 0 0	10 0 0	25 to 26
3600	100	Do., new	35 0 0	7 10 0	35 to 36
144000	Sk.	Do.	100 0 0	5 0 0	70 to 72
5000	20	*Ratcliff*	20 0 0	10 0 0	22 to 24
	20	Rio de Janeiro (L).	20 0 0	10 0 0	22 to 23
6959	5	Singapore (Lim.) .	5 0 0	3 0 0	
2000	5	Do., preference . Shanghai	5 0 0	7 10 0	
4800	50	*Sth. Metropolitan*	50 0 0	10 0 0	70 to 71
15000	10	*Surrey Consumers*	10 0 0	9 0 0	12 to 12½
10000	10	Do., new	6 0 0	9 0 0	6 to 6¼
9000	4	United General . . (Limerick)	4 0 0		2 to 2¼
10000	10	*Victoria Docks* . .	5 0 0	6 0 0	
3000	10	*Wandsworth & Putney*	10 0 0	7 10 0	13¼ to 14
20000	10	Western (L.) A sh.	10 0 0	10 0 0	13⅝ to 14¼
10000	10	Do., B shares.	5 0 0	10 0 0	6⅝ to 7
10000	10	Do., C shares.	5 0 0	10 0 0	6⅝ to 7
20000	10	Do., D shares.	1 0 0	10 0 0	1¼ to 2
8000	5	*West Ham*	5 0 0	7 10 0	6 10 0
6000	5	Do., new shares.	3 0 0	7 10 0	3 18 0
551	10	West London Junction (Lim.) . .	10 0 0	6 0 0	
520	10	Do., preference .	10 0 0	6 0 0	

Advertisements.

JOHN VICKARY,

GAS ENGINEER AND CONTRACTOR, IRON AND BRASS FOUNDER,

WORKS—EXE ISLAND, EXETER,

Tenders his best thanks to the various Gas Companies in **England, Ireland, and Wales,** for the very liberal and kind support he has received for the last **22 years,** during which period he has erected and extended above **200 Gas-Works.**

In addition to the numerous towns wherein he has been engaged, he begs reference to the following testimonial:—

Plymouth and Stonehouse Gaslight and Coke Company.

Sir,—I have much pleasure in testifying that the 100-foot Telescope Gasholder and Cast-Iron Tank, erected by you for this Company in 1862, has given the highest satisfaction, and never required the slightest attention or adjustment since its completion.

(Signed) PETER ADAMS, Chairman.

He has also erected a 100-foot Gasholder and Cast-Iron Tank at **Exeter;** an 80-foot Telescope Gasholder and Iron Tank at **Devonport;** a 90-foot at **Torquay,** &c. &c. At either of those works satisfactory references can be made.

He also begs particular attention to his **Improved Gas-Meters,** either **Wet, Dry, or Compensating,** the materials and workmanship of which guaranteed of the very best description, and which has gained for his Meters so excellent a reputation for these last **20 years.**

RETORTS, DIP & ASCENSION PIPES, HYDRAULIC MAIN, CONDENSERS, PURIFIERS, STATION-METERS, GOVERNORS, VALVES, and GASHOLDERS,

Of any size, and every description of article required in Gas-Works.

Mains, Tees, Connexions, and Syphons, from 2 to 12 in., always in stock, and supplied at Scotch prices.
Clay Retorts and Fire-Goods of every description.
Gas-Fittings of the most modern designs.
Iron Pipe and Fittings, Service Cocks, &c.
Plans, Specifications, and Estimate for the erection of New Gas-Works of any size furnished.

ECONOMY IN GAS PURIFICATION.

Mc DOUGALL'S

HYDRATED PEROXIDE OF IRON.

This Oxide is now well known, and has gained at a number of the largest gas-works at home and abroad a decided preference for efficiency and durability. It is free from any mixture of sawdust or other material, every particle being available for use, thus causing the Purifiers to work double the time before it requires renewing, and saves one-third the cost of labour in charging them. It readily takes up sulphur, revivifies rapidly, and lasts longer than any other Oxide in the market. Prices on application to—

Mc DOUGALL BROTHERS, Manufacturing Chemists,

LONDON—11, Arthur Street West, London Bridge, E.C.; MANCHESTER—Riga Street, Shudehill.

PHŒNIX GASLIGHT and COKE COMPANY.

NOTICE is hereby given, that the HALF-YEARLY GENERAL MEETING of PROPRIETORS holding £300 and upwards paid-up capital in this Company will be holden, pursuant to the Act of Incorporation, on WEDNESDAY, Jan. 1, 1868, at Two o'clock, at this office, to be immediately adjourned until WEDNESDAY, April 8, 1868, at Twelve for One o'clock, at the Bridge House Hotel, in the Borough of Southwark, for the purpose of declaring Dividends to the present Christmas, to elect Directors and Auditors for ensuing year, and for other business.

By order of the Court of Directors,
ISAAC ADOLPHUS CROOKENDEN, Secretary.

The Transfer Books will be closed on the 24th instant, and reopened on the 1st of January, 1868.
70, Bankside, London, S.E., Dec. 16, 1867.

WANTED, a situation as Manager to a Gas Company, making from 5,000,000 to 10,000,000 annually. Has had good experience in every branch. Good references can be given.
Address PROPRIETOR of Gas-Works, Tickhill, near ROTHERHAM.

TO GAS COMPANIES.

WANTED, a situation as Manager to a Gas Company making over 10,000,000 annually. The Advertiser is a mechanic, and has had large experience in all the branches of his profession. Can keep accounts by double entry, and collect if required. No objection to go abroad. Testimonials, references, and security can be produced of a satisfactory nature.
Address J. K., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

TO GAS COMPANIES.

WANTED, by May 1, 1868, a second-hand set of FOUR PURIFIERS, 10 ft. to 12 ft. square, with centre-valve, connexions, lids, and lifting apparatus complete. State depth of purifier and of lute, size of connexions, &c., and price, to the SECRETARY of the Leamington Priors Gas Company, before the 20th proximo.
Gas-Works, Leamington, Dec. 21, 1867.

FOR SALE.—Two Dry-Lime or Oxide PURIFIERS, 21 ft. long, 15 ft. wide, 4 ft. 6 in. deep, with covers and wooden sieves complete.
May be seen and further particulars obtained at the PHŒNIX GAS-WORKS, Bridge Foot, VAUXHALL.
London, Dec. 19, 1867.

FOR SALE, Cheap, about 30 Second- hand LAMP-PILLARS, and a quantity of old GAS-MAINS, various sizes.
For particulars, address C. E., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

TO LAMP MAKERS AND ENGINEERS.

THE Metropolitan Board of Works are prepared to receive TENDERS for the supply of the following ARTICLES for the use of the Fire Brigade:—viz., 87 pairs of copper lamps, 87 pairs of tackle blocks, 10 cwt. of tarred bolt rope. Sealed patterns of the articles required may be seen on application at the Office of the Board, Spring Gardens, between the hours of Nine a.m. and Four p.m., and on Saturdays between the hours of Nine a.m. and Two p.m. The articles to be supplied must be precisely similar in every respect to such sealed patterns, and any article in which this condition is not complied with will be rejected. Tenders should be addressed to me, at this office, and marked on the outside "Tender for Copper Lamps, &c.," and no tender will be received after Four o'clock on Monday, the 6th of January next.
JOHN POLLARD, Clerk of the Board.
Spring Gardens, Dec. 17, 1867.

LAMBERT BROTHERS,

MANUFACTURERS,
WALSALL.

REDUCED PRICES OF
IMPROVED GAS-VALVES
WITH WROUGHT-IRON PINIONS.

2, 2¼, and 3 in.... 12s. per in.
4 in. to 6 in..... 11s. „
7 in. to 12 in..... 10s. „

These Valves are all proved on both sides to 30 lb. on the square inch before leaving the works.
Valves made with outside racks to order.
Also Water-Valves, with gun-metal faces and gun-metal screws.

WOOD SIEVES for GAS PURIFIERS.

THE BEST AND CHEAPEST
CAN BE PURCHASED FROM
T. COULTHARD, WEST STRAND, PRESTON,
LANCASHIRE.

D. BRUCE PEEBLES,
Gas-Meter Manufacturer,
FOUNTAINBRIDGE
EDINBURGH.

WOLVERHAMPTON RETORT WORKS.
ESTABLISHED **1840.**

JOHN EUNSON AND SON,
GAS ENGINEERS, AND MANUFACTURERS OF CLAY RETORTS,
AND FIRE GOODS IN GENERAL,
WOLVERHAMPTON.
Retort Mouthpieces, Bolts, Nuts, and every description of Wrought-Iron Work.

WALKERS' PORTABLE STEAM BOILERS,
ON WHEELS,

Constructed expressly for Gas-Works for cleansing the pipes and apparatus of accumulations of Naphthaline, congealed Tar, &c., thawing the Gasholder Tanks and Water Lutes of Telescopic Gasholders, working Steam-Engines, &c.
No Gas Company should be without one, the entire cost being often saved in one winter.

MIDLAND IRON-WORKS, DONNINGTON, NEWPORT, SHROPSHIRE.

TO GAS COMPANIES AND ENGINEERS.

FOR SALE.—A Good Cast-Iron Tank, in excellent condition, 45 feet diameter, 14 feet deep, either with or without Gasholder.
Also the following STATION-METERS:—

One to pass 12,000 cubic feet per hour.				
One	„	8,000	„	„
One	„	4,000	„	„
Two	„	3,000	„	„

The whole have been taken apart, thoroughly examined, and are in good working order, equal to new.
The above have been taken down to make room for larger.
Apply to JOHN VICKARY, Gas Engineering Works, EXETER.

COTTON SEED PITCH.

ABOUT 400 tons of this valuable substitute for Cannel Coal to be SOLD.
Mr. Evans, of the Chartered Gas-Works, reports that this Pitch yields 22,000 cubic feet of 28-candle gas per ton.
The Gas being very rapidly produced makes this material a great desideratum for Gas Managers.
Address EDWARD HALES, Esq., Managing Director, Oil Seed Crushing Company, Limited, 35, SEETHING LANE, E.C., and Dover Oil-Mills.

FRASER'S PATENT RIBBED RETORTS.

THESE Retorts have been introduced at a large number of Gas-Works. The great durability of the Ribbed Iron Retort specially recommends it for works where an exhauster is not used. The Clay Ovens and Retorts are so constructed as to favour the more speedy and effectual carbonization of the Coal, whilst the deposition of Carbon does not so readily take place as in the ordinary Retorts.
Illustrated circulars with prices delivered will be furnished on application to ALEX. C. FRASER, Gas-Works, COLCHESTER.

BIRTLEY IRON WORKS,
CHESTER-LE-STREET,
DURHAM.

Manufactory for every description of Casting and Machinery for Gas-Works and Water-Works.
Warehouse in London for Cast-iron Pipes and Connexions of all sizes and in any quantity, Scott's Wharf, Bankside, Southwark.
Office in London, Mr. E. M. PERKINS, 78, Lombard Street.

STEARS BROTHERS & CO.,
Gas Engineers and Contractors,
3, GEORGE STREET, HULL,
AND
73, COLEMAN STREET, LONDON, E.C.

Contractors for Gas-Works of any size at home or abroad. Copy of testimonials from numerous Gas Companies can be had on application.

D. W. OGG and CO. have lately engaged to represent one of the largest shippers of Scotch Cannels at prices that cannot fail to command the attention of Gas Companies at a period like the present, when quality of gas seems so desirable.
Offices, 3, Jeffery Square, St. Mary Axe, LONDON.

AUCHINHEATH, Lesmahago, Gas COAL, known in the market for the last fifty years as a first-class gas coal.
JAMES FERGUSON and CO.,
Sole Lessees of the Auchinheath Coal-Field, are prepared to ship the above at Glasgow, Greenock, and Ardrossan, on the west coast of Scotland; and at Granton or Leith, in the Firth of Forth, on the east coast. Also to forward them to any railway-station in Scotland or England.
Price and other particulars may be learned by addressing
JAMES FERGUSON and CO.,
GAS COAL WORKS,
LESMAHAGO.

WANTED, by a young Man (22), a situation as CLERK. Has had seven years experience. Can read indexes.
Address A. B., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

THE Broughton Coal Company, near Wrexham, have about 1000 tons of CANNEL COAL to dispose of.
Apply at the BROUGHTON COLLIERIES, near WREXHAM.

BELGIAN CLAY RETORTS.

J. SUGG and CO., late ALBERT KELLER, Ghent.—The removal of the import duties on Earthenware permitting the entry of Clay Retorts into England, Messrs. Sugg, of Ghent, beg to draw the attention of the Gas Companies of London, and other Cities, to the very superior quality of the RETORTS manufactured by them. They can be made of any size, in one piece, and of any form. The price will be in proportion to the weight, and very moderate in comparison to their value.
Communications, addressed to J. SUGG and Co., GHENT, will receive immediate attention.

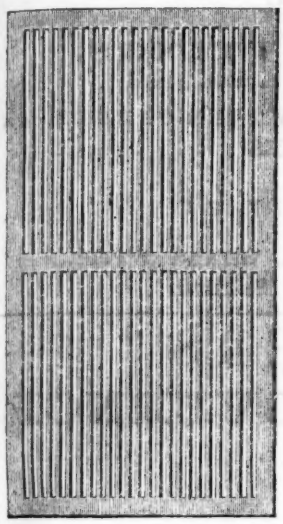
CAST-IRON Retorts, Socket Pipes, with Syphons and all requisite Connexions, Lamp Columns, Wrought Iron Tubing, Valves, Street Lamps, Sight Holes, Furnace Doors, Ash Pans, Charging and Coke Shovels, Iron Pails and Coke Barrows, Cross Bars, Fire Pots, Pumps, Iron Borings.
PURIFIERS, CONDENSERS, and SCRUBBERS erected complete, or the materials supplied; with every description of goods in use by Gas-Works, in stock, on wholesale prices, at
Mr. LYNCH WHITE'S,
Old Barge Iron Wharf, Upper Ground Street,
LONDON.

ADDISON POTTER,
WILLINGTON QUAY,
NEAR NEWCASTLE-UPON-TYNE,
Manufacturer of Clay Retorts, Fire-Bricks, and every description of Fire-Clay Goods.

THOMAS EDINGTON & SONS,
PHŒNIX IRON-WORKS,
GLASGOW,
Manufacturers of all kinds of
GAS AND WATER PIPES,
Branches, Bends, Water-Traps, Tank-Plates, Valves, and general Castings. Also
RAILWAY CHAIRS & SLEEPERS,
AND
GRIFFIN'S PATENT PERMANENT WAY.
London Office, 63, Old Broad Street.

BEST AND HOBSON,
LATE
ROBERT BEST,
100, CHARLOTTE STREET, BIRMINGHAM,
Manufacturers of
CHANDELIERS, PENDANTS, BRACKETS,
Brass and Iron Gas-Fittings, Steam and Water-Cock &c., &c.
Also,
PATENT WELDED IRON TUBES,
For Gas, Steam, Water, and other purposes.
GAS APPARATUS OF EVERY DESCRIPTION.
High-pressure Water-Valves and Cocks, &c., &c.
Plumbers Brassfoundry,
BRASS, COPPER, COMPOSITION, AND LEAD TUBES.
Works: Birmingham, and Great Bridge, Staffordshire.

WALKERS'
WOOD SIEVES OR GRIDS FOR PURIFIERS.



These celebrated Grids are used for and UNAFFECTED BY EITHER LIME OR OXIDE, WHICH IS SO DESTRUCTIVE TO IRON GRIDS. They are much cheaper, and VERY MUCH MORE DURABLE than Iron Grids.

DRAWING No. 1

Shows our most firm and durable kind of Wood Grids.

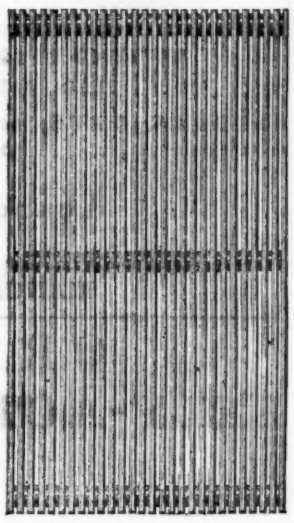
They are made BEVEL IN SECTION FOR KEEPING CLEAN, and for LARGER AREA OF GAS PASSAGE through them.

They have outside frames of HARD UNDAMAGEABLE WOOD, which enables them to be COMPRESSED UNDER HEAVY PRESSURE, PROTECTS THEM FROM ROUGH USAGE, and binds them together with STRENGTH AND SOLIDITY.

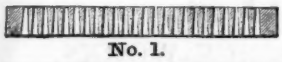
DRAWING No. 2

Shows our second quality of Wood Grids of a less substantial and cheaper kind. They are made parallel in section, and are suitable for lighter work.

Prices on application to



C. & W. WALKER,
Midland Works, Donnington, near Newport,
SHROPSHIRE.



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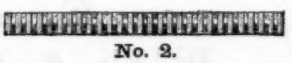

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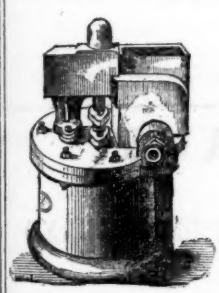
THE LONDON & WESTMINSTER METER COMPANY, LIMITED.



PATENTEES AND SOLE MANUFACTURERS OF

THE ABC GAS-METER.

EDGE'S PATENT INDEX.

MYERS'S PATENT WATER-METER.

(A CYLINDER & PISTON.)

The ABC GAS-METER shows in plain figures the money payable for Gas consumed, as well as the number of cubic feet.

MYERS'S WATER-METER is accurate in measurement, simple in action, and moderate in price.

Manufacturers of the ordinary Wet and Dry Meters, Governors, Photometers, and all other Gas and Water Apparatus.

JOHNSON'S PLACE, LUPUS STREET, LONDON, S.W.

GEORGE ANDERSON,

GAS AND CONSULTING ENGINEER.

OFFICES REMOVED TO

19, NORTHUMBERLAND STREET, CHARING CROSS.

Mr. ANDERSON advises Companies on all matters connected with the manufacture of Gas and the construction of Works.

PATENTEE & MANUFACTURER of the following Inventions:—

RETORT SETTINGS, heated by tar without the production of smoke.
STEAM-ENGINES and EXHAUSTERS, separately or combined.
FOUR-WAY VALVES, one of which is equal to three ordinary Valves.
STATION GOVERNORS in which the Gasholder cannot tilt and cause accidents.

A Pamphlet containing Eighteen Illustrations of the foregoing, with letter-press on the construction of Works, post free, 2s. 6d.

"The Author is well qualified to speak authoritatively upon the important subjects to which his pamphlet refers."—Artizan.

SILVER MEDAL, INTERNATIONAL EXHIBITION, PARIS, 1867.

LLOYD AND LLOYD,

ALBION TUBE-WORKS, BIRMINGHAM,

MANUFACTURERS OF

WROUGHT-IRON TUBES & FITTINGS,

PLAIN, GALVANIZED, & ENAMELLED, for Gas, Steam, and Water, from ⅛ in. to 6 in. bore.

STOCKS, TAPS, and DIES, GUN METAL GLAND-COCKS, WATER-GAUGES, &c.

PATENT LAP-WELDED IRON TUBES

For Locomotive and Marine Boilers, &c.

LONDON WAREHOUSE—Nº 66, QUEEN STREET, E.C.

LIVERPOOL: No. 4, Cooper's Row, and Bold's Yard, Strand Street.
MANCHESTER: Barlow's Croft, Chapel Street, Salford.

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SELF-ACTING DISTRICT GOVERNOR.

Prices, according to size, can be obtained upon application to

Mr. WILLIAM ARCHER,

METER COMPANY'S WORKS, OLDHAM.

E. J. & J. PEARSON,

DELPH & TINTAM ABBEY FIRE-CLAY & BRICK-WORKS,

STOURBRIDGE,

PROPRIETORS OF

BEST GLASS-HOUSE POT & CRUCIBLE CLAY;

MANUFACTURERS OF

GLASS-HOUSE POTS, CRUCIBLES, GAS-RETORTS, & FIRE-BRICKS OF EVERY DESCRIPTION.

THE GAS-METER COMPANY

(LIMITED), LONDON,

(Successors to CROLL, RAIT, and CO., LONDON, and WEST and GREGSON, OLDHAM.)

MANUFACTURE

STATION-METERS & GOVERNORS

At their Oldham Establishment, which has long possessed the reputation of supplying this description of apparatus of the most perfect construction and appropriate design.

CONSUMERS GAS-METERS IN CAST-IRON & TINNED SHEET-IRON CASES.

STREET GOVERNORS, PRESSURE and EXHAUST REGISTERS, TEST GASHOLDERS,

AND EXPERIMENTAL GAS APPARATUS GENERALLY.

For information, &c., apply to

W. ARCHER, Manager, Meter Factory, OLDHAM;

OR TO

GEORGE RAIT, Managing Director, KINGSLAND ROAD, LONDON.

TO CORPORATIONS, GAS ENGINEERS, AND OTHERS.

HENRY ALDER,

GRANGE METER-WORKS, EDINBURGH,

Begs to intimate that he has introduced the manufacture of DRY GAS-METERS in

CAST-IRON CASES.

These Meters are protected by registration under the "Copyright of Designs Act." They are much more durable, and at the same time more easily repaired than those in Tin Cases.

Price list and terms on application.

KIRKWOOD CANNEL COAL.
This Coal is largely used in the Gas-Works at Glasgow, Paisley, Port Glasgow, Edinburgh, Leith, and many other towns throughout Scotland. It yields 10,648 cubic feet per ton; illuminating power, 27·55 standard candles; coke per ton, 9 cwt. 83 lbs. Railway communication from the pits (at Coatbridge) to all parts of the country; ports of shipment in Firths of Forth or Clyde.
For quotations, &c., apply to Mr. JOHN MACDONALD, 68, St. Vincent Street, GLASGOW.

FIRE-CLAY GAS-RETORTS, &c., CANNEL AND STEAM COALS.
WILLIAM FRASER, Inverkeithing
(owner of the Works at which Fire-clay Retorts were first made), having greatly enlarged his works, can supply retorts and other fire-clay goods to any extent.
References can be given to managers of above a hundred Gas-Works whom he supplies.
WILLIAM FRASER ships COWDENBEATH PARROT COALS at Charlestown and Burntisland at 12s. per ton; and HALBEATH STEAM COALS, on Navy List, at 8s. 6d. per ton.

JAMES OAKES and CO.,
ALFRETON IRON WORKS, DERBYSHIRE,
AND
WENLOCK IRON WHARF, 20, WHARF ROAD, CITY ROAD, LONDON,
Beg to inform Gas and Water Companies and the public, that they keep in stock in London all the CASTINGS in general use in Gas and Water-Works, including Iron Retorts, Socket and Flange Pipes, Bends, Branches, and Syphons of all sizes, Lamp Columns, &c., &c.
N.B.—Orders for Cast-iron Tanks, Girders, Columns, Cylinders, and all irregular castings, will have immediate attention.
CHARLES HORSLEY, Agent.

OXIDE OF IRON,
We are prepared to supply, on moderate terms,
HYDRATED PEROXIDE OF IRON (BOG OCHRE),
Same quality as supplied by us to several of the most extensive Gas Companies, and which has given entire satisfaction.
FRANCIS RITCHIE & SONS,
BELFAST.

INTERNATIONAL EXHIBITION,
1862. CLASS X.
PRIZE MEDAL
For excellence of Fire-Clay Gas Retorts, and "HONOURABLE MENTION" for good quality of Fire-Bricks.
WILLIAM STEPHENSON & SONS,
THROCKLEY,
NEWCASTLE-ON-TYNE.

THOMAS CARR & SON,
MANUFACTURERS OF
FIRE-BRICKS, LUMPS, TILES, RETORTS, &c. &c.
SCOTSWOOD FIRE-BRICK WORKS,
NEAR
BLAYDON-ON-TYNE.

HARRIS and PEARSON,
PROPRIETORS OF
BEST CLASS-HOUSE POT AND CRUCIBLE CLAY
MANUFACTURERS OF
FIRE BRICKS, GAS RETORTS, &C
AMBLECOTE FIRE CLAY AND BRICK WORKS,
STOURBRIDGE.
Late in the occupation of I. and W. King. Originally J. Pidcock, Esq.
NB A quantity of best Clay Retorts in stock, viz.—Circulars, 14 inches, 15 inches. 16 inches.
D's, 16×12, 15×14, 20×16, 16×18.

HANCOCK'S INDIA-RUBBER GAS-TUBING.
All sizes, from ¼ in. to 4 in. diameter and upwards.
Also,
HORSE SINGEING APPARATUS, best make, with GAS-BURNERS, COMBS, and INDIA-RUBBER TUBING, all complete.
INDIA-RUBBER BAGS for GAS-MAINS.
WASHERS for GAS and STEAM JOINTS.
VALVES (pure solid Rubber) for STEAM-ENGINES.
PACKING (Elastic) for STEAM-ENGINES.
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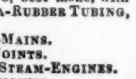
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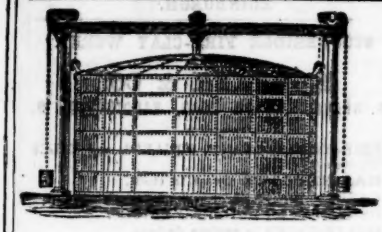

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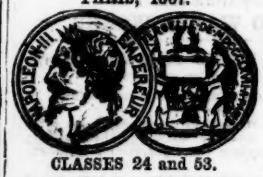

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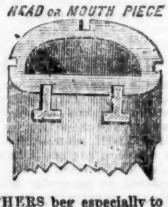

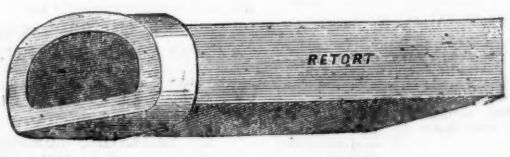

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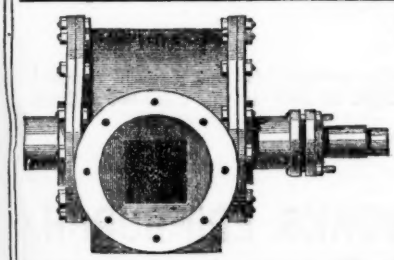

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